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### CULTURE AND PERSONALITY: A REEXAMINATION.<sup>1</sup>

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Canberra.

I TAKE it that your invitation to me as an anthropologist to join in your symposium indicates more than merely politeness—namely, some measure of agreement with the working assumption that anthropology and the psychology of personality can illuminate one another and can even be combined, to mutual benefit. This is a cautious statement of the case for the collaboration of the two disciplines. Some might find it too cautious and speak not of a "working assumption" but of a view already well founded in fact. I am not prepared to go quite so far—as yet; and if I have called my paper "a reexamination" I have done so because I feel that this is a necessary step before we can proceed further, and confidently, on the road towards fruitful collaboration.

It will be clear that I shall be speaking throughout from the standpoint of the anthropologist, and for the sake of simplicity I shall here equate social anthropology with the study of primitive cultures. Let me then begin by

saying that the personality theory burst upon us (I think this is an appropriate metaphor) only about fifteen years ago. The ground, of course, had been prepared. Anthropologists had for a long time been concerned with expressing the psychological character or type of the peoples they were studying, and with comparing different cultures on this basis. Some spoke, somewhat vaguely, of the "mentality" of peoples or of the "ethos" of cultures; or they borrowed from psychologists some such phrase as "preferred, persistent tendencies" (F. C. Bartlett). Others employed some of the less esoteric typological categories such as "introvert" and "extrovert" or "apollonian" and "dionysian". As early as 1931 Seligman had written about "Japanese Temperament and Character", a few years later (1936) comparing Chinese and Japanese culture from this point of view.

It was in the early 1940's that a group of American scholars, among them Linton, Kardiner, Margaret Mead and Hallowell, presented us with the new formula "culture and personality". The new approach quickly captured the imagination of anthropologists and sociologists; it gave a new focus to what had hitherto been scattered and tentative efforts to explore the psychological foundations of culture, and seemed to offer the key to many problems. For American anthropology at least this quick success proved a lasting one.

I do not propose to go further into sources and historical details. But it is interesting to consider the reasons for this ready adoption by certain anthropologists of the

<sup>1</sup>Read at a meeting of the Australasian Association of Psychiatrists on October 26, 1955, at Canberra.

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methods and viewpoints of the psychology of personality. There seem to me to be two main reasons. One lies in the essential analogy of the two concepts, culture and personality; the other in the developmental aspect of the theory of personality. Let me explain this.

By "culture" we mean, broadly speaking, the enduring total pattern of modes of behaviour exhibited by a collectivity of human beings. We speak of a "pattern" because the diverse modes of behaviour, corresponding to the various areas or phases of social life, hang together, showing some overall unity and consistency. And this pattern is an enduring one, both in that the given modes of behaviour are being regularly performed by the living individuals in varying situations and in that they continue to be performed over long periods, by a population continually reconstituted by death, birth and similar factors. This double constancy in turn implies that the particular pattern we discover must go deeper than the overtly visible behaviour of people, extending to their motivations, their felt needs and predispositions—that is, to their readiness to act in certain ways and not in others.

We might at once argue, on a rather superficial level, that if a human collectivity does in fact regularly behave and go on behaving in a particular fashion and no other, this must have something to do with the personalities represented in it. Differently expressed, the culture must have its personality correlate. But the link is closer and of a more systematic kind. For if we change our viewpoint slightly and consider not the anonymous collectivity exhibiting the culture at large but the individuals composing the collectivity, we find that the terms appropriate to describing "culture" are almost exactly those needed to define "personality". There are, of course, numerous definitions of personality, and I shall quote one only which seems to me both adequate and relevant in the present context. It is taken from the introduction to "The Authoritarian Personality" by Adorno and his collaborators, and is contained in the following passage.

Personality is a more or less enduring organization of forces within the individual. These persisting forces of personality help to determine responses in various situations, and it is thus largely to them that the consistency of behaviour . . . is attributable. But behaviour, however consistent, is not the same thing as personality; personality lies behind behaviour . . . The forces of personality are not responses . . . but readiness for response.

If, then, the individual personality manifests itself in enduring, consistent behaviour in varying situations, sustained by a peculiar "readiness", culture is manifest by the same tokens on a collective scale. Or, to turn the argument round, in describing a culture we describe on a collective scale the kind of readiness-cum-behaviour which indicates the personality.

Anthropologists, eager to link their studies with psychology, thus found a beautifully fitting parallel framework all ready-made. But let us be clear that, so far, the framework of personality psychology offers, to the anthropologist, nothing in the way of really new information, only a new method of describing it. Everything that can be said in terms of personality can equally be said in terms of culture, and there seems to be no particular advantage in changing our phraseology save the very general one of using a language current in a sister discipline.

This brings me to my second point. The theory of personality is obviously not purely descriptive but also explanatory, containing hypotheses on the genesis of personality, and on how it is shaped or moulded and how it responds to external conditions. There is no need to go into the various assumptions, Freudian or otherwise, involved in this theory. Only this need be said: the conditions moulding the personality are, in the main, social and cultural conditions. Certain of these stand out as having paramount importance, such as the early upbringing of children and the whole process of "socialisation" so-called. Here, it seems, personality psychology is teaching the anthropologist something new and important. It teaches him to look for the development in each individual's life of that "pattern" he discerns in the behaviour of whole groups, and it enables him to understand the process

—a circular process—whereby human beings brought up in given cultural conditions acquire the personality in virtue of which they can both conform to and perpetuate these conditions.

This circularity comes to an end somewhere—for example, in historical events which cause changes of culture. But we may disregard such influences. We may equally disregard another possible break in this circularity. I am thinking of the earlier theories, now out of fashion, which derived the personality from non-cultural—that is, constitutional and genetic factors. Now it is precisely in regard to the current theory, with its assumption of that circular process, that we may once more doubt whether it teaches the anthropologist anything really new. Anthropologists have long regarded culture and social behaviour as something that is learned, transmitted from generation to generation, and impressed upon every individual. Admittedly there is the additional emphasis on early experiences, on the impact of the family, and on the general process of socialization. But the impact of family and kinship life has always been in the foreground of anthropological interest. Also, I for one feel that there is a danger in this emphasis on early childhood, since it may deflect attention from other formative influences which become effective much later in individual life. But I will not pursue this point further.

Nor can I deny that many anthropological findings have been made clearer by the mechanisms discovered by personality psychology, and that the latter has taught us the clues by which to identify these explanatory mechanisms. At the same time, information has also gone the other way, anthropological observations having fertilized the thinking of the psychologist, presented him with new problems and guided his research in new directions. This, of course, is as it should be. But as I see it, this give-and-take is as yet far from perfect. For the student of personality (including the anthropologist that way inclined) only too often relies on anthropological field studies which are too limited in scope and give an incomplete or even one-sided picture of the culture. As a result, much of the work in culture and personality is vitiated by over-simplifications and misconstructions. It is at least partly for this reason that most British anthropologists, brought up as they are in the tradition of meticulous and exhaustive field research, have come to mistrust the whole approach. But we can, I think, be more specific as well as constructive in our criticism. The over-simplifications and misconstructions all seem to turn on one issue, on one false lead as it were. I will call it the issue of personality in the singular and devote the rest of this paper to its discussion.

If we make the analogy between culture and personality our starting point, we arrive at the conclusion that, by and large, each relevantly different culture has its corresponding type of personality. The phrase "relevantly different" itself involves a problem. Some such qualification is obviously necessary, since in the case of minor cultural differences we shall not feel justified in making inferences about the personalities involved. But we must not in this connexion think of differences in degree only. Certain modes of behaviour will, by their quality, appear to be of a kind too readily adopted or "learned" being, as it were, too much on the "surface" to be taken as evidence of personality or changes of personality. I am thinking of such things as differences in technology, in empirical knowledge, in certain aspects of economic and administrative organisation *et cetera*. It is not easy to say definitely where these surface characteristics give way to other "deeper" ones. But it will generally be agreed that religious practices, moral beliefs, aesthetic tastes and expressions, and generally all habitual conduct that is emotionally charged, belong to that "deeper" layer. And there exist numerous examples of such differences or contrasts which may be taken to indicate at once differences in culture and personality.

Let me mention some typical instances from my own experience. Thus I studied two tribes in the Nuba Mountains of the southern Sudan which lived side by side and shared the same economic, political and kinship system,

yet exhibited a striking divergence in their religious beliefs and their "temperament" in general. One tribe was obsessed by the fear of sorcery and witchcraft; the people were withdrawn, suspicious and non-cooperative among themselves, and the tribe had reacted with persistent hostility to the Administration; the other group had no witchcraft beliefs, was sociable and placid, and had established friendly relations with the same Administration under exactly the same conditions. More recently I described two other tribes in the same area, even more closely akin in various features of their culture, yet one optimistic in its religious beliefs and general outlook, the other as definitely pessimistic. Again, I worked in two West African societies, both of which held strong beliefs in witchcraft; in one group it was indiscriminately ascribed to men and women, in the other to women only, which version of the belief was linked with various other indications of strong sex antagonism.

In these and similar cases, stepping from one culture into the other indeed gives you the impression that you are meeting with different, contrasted personalities. The impression is, further, that of a widely malleable human "raw material" which by social conditions that can be isolated and defined, is shaped into one or the other type of culturally defined personality. Yet where precisely does this personality reside? The picture drawn by the anthropologist refers to over-all, typical or predominant behaviour—to the normal or average person in the group (distinguished only by age and sex). In each group there will also be individuals who do not exhibit this "typical" character or do not exhibit it in the same degree, and hence do not share the "culturally defined" personality. They represent, in some measure, atypical cases or "deviants", though these are defined only negatively, by what they are not, in the way of personality.

Now in an uncomplicated, uniform culture there may be no difficulty about admitting these exceptions and dealing with them in this negative manner, by some proviso added to the description of the average or typical case. But even in very primitive and relatively uniform cultures, the deviance may itself be acknowledged or positively recognized. For example, in many primitive societies homosexuality is so legitimized; one acknowledges a special category of quasi-men, a special "role" which such individuals can legitimately assume and which allows them to dress, behave and live like women. The legitimacy of such deviant roles, however, varies in degree and will be more or less tinged with disapproval or contempt. Let me give you two instances illustrating this.

In the two societies I have in mind, again found in the Nuba Mountains, physical courage and toughness are accepted ideals for men. The normal male is pictured as having this character, and appropriate contests, which are also tests of "manhood", are built into the training of adolescents and the age grades through which they must pass. In both societies one recognizes that boys may fail in these contests. In the first, no concessions are made. The boy in question will not be expelled from his age grade, but is shown no sympathy. His cowardice will be remembered and may prove a real handicap in later life, though there will be no formal discrimination against him. The society in a sense maintains the fiction of general "normality", and the individual who does not measure up to it is simply ignored as a "misfit" and offered no alternative "niche". In the second society, boys who fail in these contests are shown this much sympathy—that they are allowed to repeat the first age grade so that in the various contests they will be matched against weaker competitors. The mark of backwardness still attaches to them for life; they will be made fun of and despised, and girls will think twice about marrying them. Also, they will be called by the name indicating homosexuals and effeminate men. But the society recognizes them as a special class of individuals, and in this sense offers them a congenial "niche", if a contemptible one.

Where, then, in cases of this latter kind do we locate the typical, culturally shaped personality? There seem to be at least two such personalities: one approved and upheld as an ideal, to which the majority conforms; the

other a deviant, disapproved one, yet none the less demonstrated in actual behaviour and more or less openly acknowledged. The society, as it were, operates with two "niches", for the normal and the non-normal individual, and the culture is typified by this coexistence.

There is a further point. Though we all share the assumption of a wide malleability of the human character, we would not regard it as infinite. Examples like those just cited illustrate the point. Now they refer only to an obvious breakdown in the process of cultural "moulding", caused perhaps by the particularly exacting nature of the "normality" aimed at. But the cultural pressures at work may, in some cases, still prove sufficiently strong and effective to mould the desired character out of uncongenial raw material. Crudely speaking, adolescents who are not heroes "by nature" may learn to act as such; a people inclined to pessimism and hostility may learn to behave like optimists and friendly souls. I do not mean merely simulation and obvious acts of "forcing oneself"; I mean successful adaptation and "conditioning", though such processes will presumably leave some residue of frustration and suppression. Should we not, therefore, reckon with a third kind of personality, neither fully "moulded" nor fully deviant, but corresponding to a "finished product" which yet contains traces of the recalcitrant raw material that went into it (and at which we can only guess)?

Let me leave this point for the moment and turn to a different consideration. The kind of two-niche culture I outlined still represents a very simple case, for the opposed or alternative personalities need not be simply a "positive" and its "negative", one both desirable and normal, the other both undesirable and non-normal. Rather, the opposed personalities may coexist as social equivalents, or non-normality may even coincide with desirability. Think of a society which possesses mediumistic and shamanistic cults, where men holding the office of priest are expected to have visions, to fall in trance, and to exhibit various neurotic or hysterical symptoms. I have studied several of these societies, and I want to stress at once that their priesthood is not simply a niche provided for the mentally abnormal. Rather, the people sharply distinguish between the abnormality of the "ordinary" lunatic or imbecile and the person whose non-normality is religiously significant. Yet it is still a non-normality in the sense that only few individuals are expected to exhibit this character. Here, then, we have one culturally defined personality which embraces "average man"—the ordinary peasant, family head, member of his community and congregation; and another which embraces a small élite of people having these unusual gifts and perhaps altogether expected to lead an uncommon life—for example, in celibacy or relative social isolation.

We can go further and consider societies with a plurality of such differentiated "roles" and, consequently, personalities. Any society with a sharp cleavage of social class offers an example. There you may find a nobility accustomed to warfare, courting personal danger, and habituated to arrogant, aggressive and intolerant behaviour towards others. In the same society the peasant population may lead (and wish to lead) a humdrum but safe life, concerned with the routine of everyday tasks, acting humbly towards superiors and in a friendly, unassuming fashion towards each other. There may further be priests, scholars, merchants, professional entertainers, each with their particular ideals and norms of conduct. This is not, of course, an imaginary picture. Even in the relatively primitive societies studied by anthropologists we find ample evidence of such a diversity. Once more the question arises where the personality-that-equals-culture resides.

It may be argued that in such complex situations we have not one culture but several sub-cultures, each with its personality correlate. But let us be clear that every society involves a similar differentiation, if on a lesser scale—that is, a differentiation in the modes of behaviour incumbent on individuals in accordance with the position they occupy or the "role" they are expected to assume. The contrast between the average peasant and the unusual visionary is only an extreme case. Some such contrast also holds, say, between the head of a large family and

the man who has no children or only one or two; between rich and poor; between a man talented in dancing or making music and the man not so talented; between the popular fellow and the friendless one.

To begin with, these may merely be convenient categorizations of people on the basis of some attribute they acquire, fortuitously or otherwise. But with these attributes often goes a whole series of modes of behaviour, a proper "role", which the society expects and even exacts from the persons so characterized. Nor do individuals play only one such role; rather they are bound to assume a whole complex of them, simultaneously as well as consecutively. If we agree that each involves some personality attribute, then logically we must agree also that there are as many personalities in a society as there are such role complexes assumed by any one individual. And some sociologists in fact consider the only "real" personality to be this combined "role personality", or "social personality". Certain psychologists have expressed a similar view. Gardner Murphy, for example, speaking of what he calls the "situationism" theory of personality, states that it defines personality "as the locus of intersection of all roles which (the individual) enacts": "personality could almost be defined as the integration of all the roles a particular person has to enact". Or again, we may carry the idea of sub-cultures further: we may argue that every smallest sub-unit within the society which develops habits and traditions peculiar to itself, evinces both a culture and a personality of its own. This, too, has been done, the conclusion being that the number of these "micro-cultures" (my term) must equal the number of personalities in the society.

These and similar views, I think, reduce the concept of personality, not perhaps to absurdity, but to unworkable terms. At least, it becomes valueless for the anthropologist, who already operates with the concept of roles and "social personality", to which this interpretation of the psychological personality adds nothing new.

There is, however, another way of dealing with the problem, by considering not the multiplicity of roles or sub-cultures, but their combination. I do not mean that we should simply add them all up and put them in a sort of hold-all concept. This would clearly lead to a synthetic, composite "personality", including all sorts of diverse and opposed features, which can have no existence in reality. Such formulations, incidentally, have been attempted, especially in the guise of that difficult notion, the "national character". You find, for example, such a synthetic, and I think meaningless, construction in Erikson's "Childhood and Society". It is intended to portray the typical (or "functioning") American and reads as follows:

As the heir to a history of extreme contrasts and abrupt changes, (he) bases his final ego identity on some tentative combination of dynamic polarities such as migratory and sedentary, individualistic and standardized, competitive and cooperative, pious and free-thinking, responsible and cynical, etc.

When I mentioned combining the different "social" or "sub-cultural" personalities, I was thinking of extracting from them features which, over and above their diversity, they all have in common. It would be rather like comparing the various works of a particular epoch or school of art and searching for the common theme or style. Such a common theme or style has, in fact, often been attributed to any given culture considered as a whole. More concretely, the unity, consistency or "pattern" of culture we spoke of in the beginning rests not only on the fact that all the various modes of behaviour hang together and are consistent with one another, but also on the fact that in certain respects they are uniform throughout the population, regardless of the diverse roles people play or the subcultures to which they belong. It is this residue of uniformity which may finally vindicate the "personality in the singular".

Let me exemplify what I mean. In my book, "A Black Byzantium", describing the kingdom of Nupe in West Africa, I tried in the final section to draw all the threads together and to present what I called "the meaning of Nupe life", that is, the main and pervasive "themes" of

the culture—pervasive in the sense that they are embodied in the conduct, thoughts and emotions of every normal Nupe man. In that chapter I mentioned only one such theme—the preoccupation with status, rank and a social career. I can now add other traits, based on additional material since published: a religious attitude satisfied by highly abstract beliefs, on the whole tranquil and optimistic, involving nothing in the way of "religiosity"; a taste for poetry and music, for abstract, non-realistic art, and for measured enjoyments (though occasionally broken by hectic excitement); appreciation of formal etiquette, and modesty and even prudery in conduct and language.

It will be clear why I have called this series of common traits a "residue", for it obviously never occurs by itself; no real person is characterized merely by these characteristics. Whether, by themselves, they are sufficient to make up a "personality" such as psychologists are after I will not venture to decide. For the student of the society they represent a highly incomplete and to that extent unreal picture. The real, living personalities among the Nupe are made up of this series *plus* other characteristics, which vary widely with status, wealth, occupation *et cetera*. Thus the series appears together with the self-assured arrogance of the nobility; with the self-important but insecure bearing of the rich; with the humility and shyness of the poor, uneducated people. This varied accompaniment bears, further, on habits of work and leisure, on moral inclinations, and on the attitudes of fathers towards their children and of husbands towards their wives. Nor does the common series itself remain unvaried; there are the lower-class women who practise an almost institutionalized form of prostitution in spite of the common ideal of modesty; and there are men who, in native parlance, "make no effort"—that is, do not care for rank and social position like the majority. Finally, the series does not account for certain classes of individuals who, though not "average", are yet typical of the culture—namely, the priests of cults and to some extent the scholars, who stand aloof from the general struggle for rank and status.

In the final analysis, the conception of a culturally defined personality "in the singular" thus proves unworkable. Nor can it be saved by accepting, besides the "dominant" personality, an amorphous surround of deviance. We do not really meet with anything like this simple juxtaposition, but rather with numerous and complex variations added to the "common theme". I presume that these can all be gathered together in fully-fledged personality types. But if so, I doubt whether this can satisfactorily be done on the basis of the descriptive anthropological data. Not having been collected with this end in view, they are too diffuse, too much orientated on the varying modes of acting rather than on the identity of the actors, to yield the trait-by-trait coherence needed for the construction (or reconstruction) of the personalities involved. What that approach requires, it seems to me, is the additional investigation of samples of the population by means of projective tests or clinical interviews and observations.

Such investigations have, in fact, been carried out, so far with indifferent results. Let me add that my fellow workers and I are at the moment experimenting with a new method of this kind. But here we touch upon another problem, for I think it possible that such investigations may force us to revise even that incomplete but uniform "personality" which can be constructed from the "common themes" of the culture. This is the last point I wish to make, and I am making it very tentatively, because it involves assumptions which many students of personality will reject, and which I cannot at the moment fully substantiate. My point is, in brief, that the "typical" personality we can construct from the cultural data may overlie another personality, or other personalities, which need not be manifest in overt cultural behaviour, but which those other methods may uncover.

I have hinted at this before, when I spoke of the "raw material" of personality as against its culturally moulded "finished product". Such an assumption can be defended on general grounds. The "finished product" is essentially

the end result of social learning—that is, of the numerous pressures, in the form of explicit ideals, of rewards and punishments and the like, by means of which societies ensure conformity of conduct and outlook. It is surely conceivable that individuals with initially quite different leanings and predispositions will respond to this process with some difficulty and at a cost. Though they may not become obvious "misfits", but on the contrary will appear to fit perfectly into the cultural pattern, that "fit" will be achieved at the price of some (normally submerged) "residues of frustration and repression". There is nothing new in this idea. Henry A. Murray expresses it in even sharper terms when he speaks of the "eternal conflict between an individual and his culture". The individual may fully absorb (or "internalize") the dictates of the culture; but "this engenders battles . . . which split . . . the personality and, in many instances, produce neurotic illness".

I have a little more evidence than merely this piece of abstract reasoning. More precisely, I can offer three kinds of evidence. The first rests on a series of experiments, mainly of a projective type, which I carried out in 1936 among the Nupe. My primary object was to demonstrate the congruence between certain psychological processes and the picture of the "typical" Nupe as it emerged from anthropological observations. Now while a great many of the results did establish such a congruence, some did not. For example, when shown and asked to describe from memory the picture of a man dressed in a manner indicating wealth and importance, only a small minority commented on this fact; the majority ignored it, thus ignoring a characteristic which is of enormous importance in this highly status-conscious society. Again, when instructed to explain the meaning of certain words, among them the word meaning "power" or "authority"—that is, attributes highly respected and considered eminently desirable by the "typical" Nupe—nearly all gave answers consisting in very critical comments on the abuse of power and authority by unscrupulous men. Finally, while Nupe life seems dominated throughout by a clear purpose—that of social achievement—experiments on repeated recall exhibited a complete absence of any orientation upon purpose; rather, they demonstrated a diffuse interest in descriptive details or formal arrangement.

All this suggests that, if I may use the term, on the "deeper" level touched upon in the experiments the people reject the paramount interests and values of their culture, betraying instead the opposite tendencies. My samples were too small to make this conclusion fully convincing. But there is this further evidence. I have mentioned before that Nupe art is unrealistic, being entirely abstract and ornamental. And evidently the adult Nupe find this style wholly satisfying. Yet most Nupe children make excellent life-like images of animals and human beings, and one or two craftsmen working in brass produce similar figures, mainly for the tourist market. Here, then, are a gift and interest initially present but finally submerged, save in a few exceptional cases. This talent and the aesthetic stimulus that goes with it are probably too insignificant features to be regarded as relevant traits of the personality; but they illustrate the process I have in mind.

My final piece of evidence is of a different kind again, concerning psychopathic derangement. I cannot say whether its incidence is relatively greater in Nupe than in other similar African societies; but in the few cases I happened to observe there was a striking congruence between the clinical picture and the *Leit-motif* of the culture, for the delusions and psychopathic fantasies all turned upon the same theme—persecution by men of higher rank, danger from men cleverer and more successful than oneself, and so on.

I would conclude that this picture of psychological abnormality indicates a failure in the personal adjustment to social normality as the people see it. And the failure itself in turn indicates that behind or beneath the culturally defined personality traits there are others, conceivably of opposite character. In other words, I would assume that in this society (as in others) there are

many more individuals to whom the dominant theme of the culture is uncongenial than would appear from the observation of the "average" person. Some actually follow a "deviant" course (those who are said to "make no effort"); a few may find a respectable alternative niche (for example, the priests or scholars). But in the case of many more their initially deviant leanings tend to disappear under the pressure of the cultural pattern, becoming visible only in pathological failures or perhaps in psychological experiments probing that "deeper" layer.

Let me stress again that I am aware of the problematic nature of my assumption. There is, for example, Gardner Murphy's warning:

To the suggestion that somewhere there is a true personality, as contrasted with the visible responses to situations in which the personality functions, the reply is simply that no personality is describable as a free, unattached "ultimate" which does not confront a situation.

And quite recently, in a symposium on "Projective Testing in Ethnography", in which I argued the same point, one of the other participants took me to task for believing that we could, or should try to, "get behind" the personality as evidenced by cultural conduct and "stereotyped by traditional learning processes". Even so, I have stated my views in this matter for you to assess and, quite conceivably, to correct.

#### COMPARATIVE PERSONALITY STUDIES: PSYCHIATRIC ASPECTS.<sup>1</sup>

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PSYCHIATRY AND ANTHROPOLOGY are disciplines which may rightly boast of a considerable antiquity. Psychiatry may even lay good claim to antecede clinical medicine. Anthropology had its students and an organized body of knowledge even before medicine's Hippocrates. Both physical form and mental attributes were carefully noted. Contemporary "primitive societies" were clearly described and their culture and personalities acutely recorded. We can confidently identify the Æthiops of Diodorus Siculus as Negro or Negroid. There are references to the Negro in Homer, and to miscegenation, without colour prejudice, in Aristotle. Aristotle's contemporary Menander records of the Æthiops a commendable sentiment claiming that "they be recognised as nobly born in accordance with their natural bent".

The natural bent of the psychiatrist being largely therapeutic and that of the anthropologist of a different order, it is not surprising that the two disciplines have followed parallel rather than integrated courses. At times one or the other, or both, have forgotten that quality of Odysseus: "He saw the cities of many men and knew their mind."

By way of introduction I should like to glance at some of the past associations between psychiatry and anthropology. There are lessons to draw, and examples to follow and others to avoid.

Over the past two hundred years there have been sporadic borrowings and incursions into each other's territory as among anthropology, psychiatry and psychology. Until very recently, however, the methods and potential contribution from the psychological side were not such as to appear to offer obvious aid to anthropology. Early in the past century both disciplines were preoccupied with form and classification, rather than with psychic structure and the "institutions" of culture. They leaned heavily towards the biological sciences. Though there were some mutual reorientations with the sociological approach of such workers as Durkheim, the real impact

<sup>1</sup> Read at a meeting of the Australasian Association of Psychiatrists on October 26, 1955, at Canberra.

of psychological studies on anthropology came after the earlier works of Sigmund Freud.

By the turn of this century the anthropologists had collected a monumental corpus of information on the material culture, habits and customs of all the preliterate peoples then known to Western learning. They had extended their researches to some peoples who had acquired a more advanced civilization; and a wealth of accumulated knowledge awaited further investigation. It is of some interest to note that, with a few exceptions, anthropologists were surprisingly unaware of the intricate and fascinating psychological problems inherent in their data.

Freud and many of his followers turned eagerly to anthropological data for support and illustration of certain aspects of analytical theory for which they claimed universal validity. Unfortunately they did so without first acquiring a proper understanding, let alone a mastery, of the material they so freely selected. Some of Freud's earlier use of anthropological data was incorporated in his "Totem and Taboo". Most anthropologists realized, even if some were more suggestible, that Freud was discussing a pattern of child-rearing which was by no means the rule in all societies. Weakness in part of the argument of "Totem and Taboo" being manifest, considerable doubt was thrown on other inferences. Among these we must include misleading, if plausible, analogies between the behaviour of some "primitive peoples" and Viennese "neurotics".

Let us examine another psychological contribution. At the time when Freud first published his "Three Contributions to the Theory of Sex", it may well have been true that in large segments of European society educated people were virtually unaware of infantile sexuality. This was not, however, true for many other contemporary societies. Polynesians generally, and the Marquesans in particular, were perfectly familiar with "infantile sexuality", whether as a natural expression or heightened by erotic training. Obviously anthropologists were also aware of infantile sexuality in these societies. Yet at the time many followers believed, and some still believe, that Freud made an original discovery of this universal phenomenon. Even scientific societies sponsor myths.

My third example concerns something which Freud regarded as central to analytical conceptual structure—namely, his special treatment of the Oedipus myth. To use Freud's words:

I venture to assert that if psycho-analysis could boast no other achievement than the discovery of the repressed Oedipus complex, that alone would give it a claim to be counted among the precious new acquisitions of mankind.

The analysts subjected anthropological data to some amazing distortions in seeking a universal validity for the Oedipus concept. Yet refutation of this claim presented little difficulty, for in many societies, of which the Polynesian and some Melanesian groups may serve as example, it either does not, and moreover seemingly could not, exist. Even without anthropological evidence, more recent work carries further conviction that Freud "distorted the meaning of the Oedipus myth to suit his own preconceptions". This is doubly unfortunate, for a valuable lesson has been obscured, and a misleading one propagated.

I am not concerned to pursue the theme of Freud's misreading of one selected play out of Sophocles's triad. What is of importance is that, despite early grave and patent errors, psychoanalysis was not rejected by anthropologists. Some valuable new insights were gained despite their more than dubious theoretical foundation. Anthropology turned to psychoanalysis rather than to the older psychology and non-analytical psychiatrists. Within a few years of the publication of W. H. R. Rivers's "Instinct and the Unconscious", the new heaven was working furiously. An era of bold assertions and sweeping generalizations followed. Many dubious analogies were disseminated; of these, H. G. Van Loon's assertion that "the psyche of 'primitive races' resembles very much the psyche of children" may be quoted. Anthropological best-sellers were at hand. They were widely read. Into the early flood of the psychological movement in anthropology

seeped a more or less implicit social reform orientation. For a time it almost looked as if there might be a return to the fashions and methods of the later eighteenth century as popularized by Voltaire and Rousseau on the earlier models of Tacitus.

A little over twenty years ago, community of interest began to centre in the many problems which relate personality of members of a society to the cultural matrix in which they live. "Culture and personality" became "personality in culture"; a vast new field of interrelationships awaited exploration in terms of contemporary knowledge. On this common ground there was as yet no settled common frame of reference and no suitable working hypothesis as to the nature of human personality as a structural whole. Understanding of cultural institutions was equally uncertain.

Some psychiatrists and psychoanalysts, hitherto primarily concerned with the individual, turned their attention towards the elucidation of psychic and personality patterns and structure in relation to group characteristics. Once again, they borrowed heavily from anthropology before they could progress with their problem. Some fresh concepts allowed a better correlation of multi-discipline observations—the concept of the "institution", for example, as defined by Kardiner:

A fixed mode of thought or behaviour held by a group of individuals (i.e. a society) which can be communicated, which enjoys some common acceptance and infringement or deviation from which creates some disturbance in the individual or in the group.

Again Linton's definition of a society:

A society is a permanent assembly or collection of human beings; the institution by which they live together is their culture.

These concepts, together with others like that of basic personality, drew attention to the importance of the many things individuals in any given society had in common; collectively these special points in common served to differentiate one society from other societies. But I am still not up to date.

World events for a time directed the attention of psychiatrists to certain "group differences" related to psychiatric breakdown in displaced persons and persons under stress of military service. Some important statistical analyses of type and incidence of breakdown in differing racial, national and denominational categories were published. Out of these studies material of importance to anthropologists has emerged, though I fear it is in danger of being overlooked. For example, studies in the type of "coping mechanisms" of various groups under stress—sometimes restricted, it would seem, to a single method of choice—must have a close bearing on the "institutions" such as society supports. Recourse to alcohol as an exclusive defence in some societies is an example which comes to mind. Other work on the psychiatric side, heavily orientated analytically, concerning personality of individuals who develop certain somatic disorders, is perhaps open to scepticism. One finds it hard to believe that Parkinsonism, for example, is necessarily an outcome of a particular personality structure, any more than adult personality in a primitive community is necessarily solely related to the form of toilet training. One suspects—and I suggest one may predict—that some of this work will shortly suffer the eclipse which overtook the once popular "Physiognomias" of the sixteenth century, of which Cocle's "Physiognomias", published at Strasbourg in 1533, is an example.

Other aids to the study of similarities and differences in individual personality and culture may be found in such schemes as Kluckhohn and Mowrer's "determinants" with their universal, communal role and idiosyncratic components. Let me add that there are in fact a few universal components to be found in all societies, but they are very few—incest, taboos, marriage, prohibition of murder within the in-group, among them.

From psychiatry has come a greater appreciation of the importance of the individual as the unit of study in social disciplines. As Sapir pointed out, "it is difficult to see how

cultural anthropology can escape the ultimate necessity of testing out its analysis of patterns called social or cultural in terms of individual realities". Unfortunately psychiatrists sometimes reduce individual realities to somewhat arid technical description. Nevertheless, the individual case history as used in clinical psychiatry has proved helpful to anthropologists in the compilation of individual studies of outstanding or deviant personalities in primitive societies, and of community studies.

I will turn now to more specific matters in a field in which I have some personal acquaintance. It is curious and perhaps unfortunate that in Polynesian studies more attention has hitherto been paid to smaller island groups than to the more numerous and more accessible Maori populations of New Zealand and the Cook Islands. There is everything to commend greater attention to Maori studies. From 1769 onwards there is a large and well-documented corpus of observation. Many of the early missionaries and colonists were good observers and competent scholars. Many early records survive. Oral traditions have been recorded; many are still alive—and no doubt added to—by present-day Maori elders. There is a considerable volume of clinical psychiatric observation in Division of Mental Hygiene records, and in other government departments, especially child welfare, and probation offices likewise. The records of the Maori land courts also preserve interesting material of personality attributes peculiar to the Maori. Yet up to date field studies have hitherto been few in number and of uneven quality.

All field investigators should possess special aptitudes and sympathy. In the case of a proud race, very conscious of Maoritanga, care has to be taken to avoid premature arousal of latent hostility, especially in a long-term project. A small pebble makes a big ripple in the pond of Maori opinion.

I propose to illustrate one aspect of personality differences as they affect the resistance of the Maori to psychiatric breakdown in comparison with the European population of New Zealand.

The admission rate of Maoris to mental hospitals is significantly lower than the European rate. When the 1953 figures are taken, the Maori rate was 20.61 per 10,000. The expected rate on a comparable age-structure population basis should have been 31.27 per 10,000. The European rate was 47.73 per 10,000. As the Maori population is a relatively young one—in the sixty to sixty-five years age group they form 2.2%, whereas in the fifteen to twenty years group they form just under 10%—the difference demands inquiry. Passing over the older age groups and gross congenital defect, one observes certain differences in the incidence of types of mental disorder in the Maori compared with the European.

1. The numerical incidence of schizophrenia is roughly the same as that of the European population, though the content of the disorder shows some cultural patterning.

2. States of excitement of brief but unusual intensity are a little commoner.

3. In depressive illnesses and in some hallucinatory disturbances, it is commonly noted that the patient may believe himself to be in danger from what the Maori refers to as "Maori business". By this term he means evils supposedly procured by hostile recourse to a *tohunga*, or incurred by some unwitting breach of *tapu*. The idea of *tapu* and avenging *mana* is by no means dead.

4. Psychoneuroses, other than those associated with alcohol, are less frequently a cause of admission to mental hospitals among Maoris.

5. Overt homosexuality is rare—a reflection of freer heterosexual mores.

It will be seen that items 3, 4 and 5 call for further elucidation.

To what extent do cultural patterns protect the Maori from his by no means inconsiderable load of anxieties and insecurities? Are there any particular personality factors which assist? How is Maori personality closely related to those elements in Maori culture which have proved their

continuing purpose by survival? It is interesting to note that the most persistent elements of Maori culture are those which centre around kinship, the tribal or community *marae* and meeting house, the funeral *tangi*, child-rearing practices, easier acceptance of maternity whether licit or illicit, and a freer Polynesian pattern of adolescent pre-marital sexual mores. To these elements should be added one or two less attractive survivals which may add to rather than lessen the impact of anxiety: I refer to the survival of belief in *makutu* and to man-destroying *mana*. Perhaps I should say man-disturbing *mana*, for the Maori of today becomes ill, but rarely if ever dies of "Maori business".

Passing over reference to child-rearing practices, which differ considerably from the European in terms of affection and the upbringing of younger by slightly older children, I would dwell more on the customs and practices centring around kinship and group gatherings. In these reunions, whether in small communities or at tribal gathering places where there is a traditional open space in front of a *whare kai*, a remarkable amount of time is spent in roundabout talk and gossip of persons, their behaviour, their motives and any departures from the approved norm. The feeling of oneness and at-homeness in Maori gatherings is a very deep experience and dear to the Maori. In the meeting house, surrounded by the carved figures of ancestors, there is a feeling of belonging and of security. The earlier gossip and the continuing discussions serve, not only to keep a check on deviant behaviour, but as a means of verbal exploration of possible new patterns. Furthermore, they provide a readily available means of catharsis and the harmless ventilation of hostility and latent aggression. The same spirit prevails in smaller gatherings where Maoris congregate. I think it may be said that the Maori has elevated gossip and grievances to the dignity of a therapeutic procedure. Some more reputable Maori *tohunga* may be as effective as some psychiatrists, for the *tohunga* is prepared for a three-day sitting—and with a single patient.

I mentioned earlier that there had been few up-to-date Maori community field surveys. With the foundation of a chair of social anthropology at Auckland, and with Professor E. Beagleholes's interest in these problems at Victoria College, Wellington, the gap left by the death of Professor I. W. S. Sutherland, of Christchurch (who was very much *persona grata* in some Maori circles), is being filled with promise of more research. Though the research centre in New Zealand must develop mainly from Professor R. Fiddington's department at Auckland, the particular work to which I wish to refer now is from Victoria College, where J. E. Ritchie is undertaking a field survey for the Carnegie Social Science Research Committee.

In an interim report Ritchie has found some evidence of social factors which he thinks may underlie the Maori's success in surviving anxiety loads which might overwhelm a European. The Maori survives at a social price—the price of economic limitation. Among those observations I would quote the following: (i) coping mechanisms, such as gossip and grievance-manufacture, are working well and are readily and immediately available. (ii) Alcohol is used to excess, and the coping mechanisms are intensified during its consumption. (iii) The orientation of the family social structure in the Maori community is towards the wider kinships, and directed towards coping with difficulties rather than achieving a higher economic standard. A relatively low economic status is the price of mental integrity. The first two observations are quoted in Ritchie's words; the third is very much condensed from the less clearly formulated wording of Ritchie's third and fourth points.

On the basis of a long-standing interest in Maori ways and a close association with Maori psychiatric illness, I would suggest that this "contemporary field report" merely confirms older recorded observations collected by observers with a more intimate knowledge of the Maori people and

<sup>1</sup> It is interesting to compare this with observations on Irish Roman Catholic immigrants to the United States of America. A recent survey suggests that in large groups alcohol is the sole preference to combat early psychiatric distress.

language, and long known to a restricted circle of Europeans with Maori associations. It may be of interest to note that there is a growing accumulation of Rorschach and T.A.T. protocols in field surveys of Maori communities in New Zealand. The results of these studies and of individual biographical studies have not yet been fully evaluated. I am a little sceptical as to whether their industry will add much of value not already known.

Before concluding, I should like to give one other illustration of the way in which the Maori personality functions much better within the framework of the more stable elements of persistent Maori culture. During the war there was a slightly lower psychiatric casualty rate in the Maori Battalion than in the Second New Zealand Expeditionary Forces generally. The Maori Battalion, as you know, was heavily engaged for long periods in fierce engagements in Greece, Crete and North Africa and later in Italy. I had the privilege of being closely associated with the Maori Battalion from May, 1940, until August, 1941, when I was serving with the Fifth Field Ambulance which cleared their brigade in Greece and Crete. In the Maori Battalion command structure, considerable deference was paid to the Maori concept of leadership and tribal feeling. Representatives of chiefly families were at all levels of battalion and company command. Traditional practices, such as the personal punishment of offenders by the chief, reappeared in modern dress in the conduct of company orderly rooms. Sentences were often carried out behind the orderly room, and I do not recall any instances in which the mana of the company commander failed him in his task. Other offences which carried a special sense of injury to the Maori mind, such as the sale of mutton birds, carried a heavy penalty—far heavier, indeed, than would have been the case with valuable army stores. Morale was well sustained and the sense of racial integrity lessened the burden of anxieties. Had the Maori been dispersed among European troops, I am convinced it would have been otherwise.

These observations have, I fear, been somewhat lacking in cohesion. I trust, however, that some of the ideas and viewpoints may serve as pegs upon which to hang discussion.

#### PSYCHIATRIC PROBLEMS AMONGST MIGRANTS.<sup>1</sup>

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THE increase of our population by the importation of persons born overseas is not an entirely new feature of our national progress; but under the present circumstances and because of its present magnitude it has become a major influence in all aspects of our life—social, cultural, economic and industrial. Recently the selection of the millionth migrant since the end of World War II has been celebrated. This means that 1,000,000 people have severed either completely or to a large degree the contacts and ties with their former existence, and face the uncertainty inseparable from a new start in a new way of life in a new country. Also it means that one in every ten of our population has arrived from overseas since the end of the war. That very proportion creates problems of assimilation in order that the newcomers may be absorbed into our community without discordant repercussions, and in such a way that they do not form isolated communities devoted to a philosophy at variance with that of the general community. The problems of selection and of assimilation vary with the type of migrant and with the reason which has caused the particular migrant to come to Australia. In general migrants come either from the United Kingdom or from the mainland of Europe. Many in both classes are seeking greater opportunities for themselves and for their children. They believe that many careers in their own countries are over-crowded. Farmers from Holland

find that the land available is not sufficient for them to bequeath an adequate portion to each of seven sons. Unemployed from Italy and Greece look forward to continued employment. Professional men from the United Kingdom may be apprehensive that their individual initiative is becoming limited. Tradesmen believe that developmental work in Australia gives them greater prospects of graduating from the journeyman class to the master builder category. There are many other examples. These groups meet few difficulties in assimilation, for they have clear ideas on their prospects before they arrive. The mental stress to them is minimal.

There is another group which finds attraction in the isolation of the Australian continent. We are inclined to deplore this isolation at times and rejoice that it is becoming less and less as modern means of transport increase in speed and capacity. However, to those who live in the midst of threats of war, or subject to the blasts of a cold war, the isolation of Australia is a haven of security and peace. The members of this group have been subjected to severe nervous tension before their departure from Europe. Many find difficulty in assimilation because they believe that their old way of life is best. Some wish to graft their philosophy on to the Australian way of life and are not prepared to sink their identity with the community. Some, also, never lose their desire and intention to return to their native lands when times are better.

Then there is a large group who have come to Australia because their own homeland is no longer available to them. Some could return, but would find themselves subject to a political philosophy they cannot tolerate. Others have been active opponents of the present dominant regime and would court imprisonment or death were they to return. Most were for years prisoners of war or inmates of concentration camps, and their transfer to Australia has been the open door to a normal existence. Many of them have suffered appalling psychological experiences, and their failure to pass through that door finally and immediately to a normal existence can be readily understood.

Additionally there is a small group of people who have failed in their own country, and whose friends or advisers suggest that they should be given a chance overseas where they may be expected to make good with new opportunities. These particular types have failed either socially or industrially, and it is generally found that their failure is due to their own inherent shortcomings. They seldom seize the opportunities offered by a new country, because in fact they cannot. Fortunately a proportion return to their former homelands, to the friends of the social level to which they were accustomed.

Migration is a never-ending process. The majority of the groups I have previously mentioned have come out by means of governmental or international help of one sort or another, and the large majority have settled in to become permanent citizens of Australia. A number sever completely their ties with the old world and become the founding members of a new family tree. Many, however, are only one branch of an old-established family, and as soon as they have made good in Australia they become recruiting agencies for their relations and friends overseas. Children persuade their aged parents to follow them. Parents bring out their adult sons and daughters or their brothers and sisters. A very large section of our migrant intake results from this second wave, and it is very satisfactory from a national viewpoint that it should be so. From the economic and perhaps the selfish angle, it is preferable that the family should be reunited in Australia rather than the wage-earner in Australia should send regular payments back home to support his dependants in Italy, Greece, or wherever they are. From the humanitarian angle it is even more essential that the families should be reunited, and no one would wish to hinder this natural process. In the process, however, there arise certain difficulties of medical selection. The original migrants go through a process of screening which, subject to certain limitations, ensures that they retain a satisfactory standard of physical and mental health. I will refer to this later; but for the moment I would emphasize the additional problems which the selection of dependants of those already in Australia occasions. It is a rule now

<sup>1</sup> Read at a meeting of the Australasian Association of Psychiatrists on October 26, 1955, at Canberra.

that when a workman desires to come to Australia, his wife and children are examined at the same time, even though they do not intend to accompany him immediately. However, it would be impracticable to include his parents or his brothers and sisters or even his adult children in that original examination. Also, it may not be realized that there are a number of married men in Australia who have maintained their families overseas for ten or fifteen years, visiting them periodically, but not until now being anxious or able to persuade them to venture to the new home. It is inevitable in these cases that there must be some lowering of the standards of selection. Are we morally justified in advising against the entry of a mongol or a moron when the father has already established himself in Australia? And on the other hand, is it economic? We might regard the mongol, who requires only food and accommodation, as one end of a series, at the other end of which is the patient confined to a mental home by reason of incurable mental disease. There would be no question of the entry of such a dependant, no matter what the financial circumstances of the patient or what the compassionate grounds. The question arises how far along the series should the compassionate grounds extend. It might be easy to advise the acceptance of a daughter with hysterical fits or a neurotic wife or perhaps a son with spastic diplegia. Persons with epilepsy or persons with a history of schizophrenia would certainly cause us more concern, while the paranoids and acute or chronic manics would debar themselves immediately.

I have diverged somewhat to discuss the problem of the dependants—that is, the problem of the person who is known to have a mental or nervous disability. I would now like to return to the main body of migrants and to the problems associated with discovering the presence or absence of mental disease. This is allied with the general medical examination, but is by far the most unsatisfactory facet of the examination because of the peculiar difficulties which exist. Let me explain that the Commonwealth Government maintains quite a large team of medical officers overseas purely for the medical examination of migrants. There are at the present moment three in England, eight in Germany, four in Holland, 10 in Italy, and three in Greece. In the United Kingdom, in addition, use is made of a selected panel of private practitioners, spread throughout the country and covering every town. In London there are examination rooms at Australia House staffed on a seasonal basis by Australian graduates doing post-graduate work overseas. This composite method gives a consistent and satisfactory level of selection.

In each of the European countries there is also a panel of local practitioners, who make a preliminary examination of intending migrants and who bring to notice the migrants' disabilities and deficiencies. In some areas many of the migrants are reexamined by the Australian medical teams, while in others the Australian teams accept the whole responsibility.

It will be readily understood that the language difference creates a serious difficulty in estimating the presence or absence of mental disease. Many of our medical officers are reasonably proficient in the particular foreign language, and all have lay interpreters available. Neither of these aids provides fully the accurate understanding so essential in this field. The difficulty is overcome to a large extent in doubtful cases by referring the candidate to recognized local psychiatric specialists or clinics. It is unfortunate that in a number of European countries such reliable specialists are insufficient to cover the needs of the whole country.

Another difficulty arises from the standard of education met in the particular countries. Many adults are illiterate by our standards, and similarly many children have no education whatsoever. There is, again, the general sympathy with the mentally affected and the desire to enable him or her to have a new chance. Finally in this regard, in those countries ravaged by World War II, like Germany and Italy, medical records have been destroyed, and the past history of many applicants for migration has not been obtainable. This was particularly the case among the 170,000 migrants who reached Australia under the auspices of the International Refugee Organization during the years

1947 to 1950. These people have existed only as numbers in concentration camps for many years, and in any case no longer had any connexion or communication with their home lands.

I have endeavoured to ascertain the number of cases of mental disease amongst migrants, but find it difficult to present accurate figures because they do not seem to exist. Only in the last couple of years has it become the practice for all mental hospitals to record the nationality or country of origin of the patients or the period of time during which they have been in Australia. It has also to be borne in mind that there is a larger proportion of adults in the migrant group than in a normal section of the Australian community. From the figures available it can be shown that the rate of mental disease is higher in the International Refugee Organization group than in later groups of migrants. In the group from the United Kingdom the rate is approximately the same as the Australian rate of 0.6 admission to hospital per 1000 population, while in the European group the rate is appreciably lower.

To the end of 1953, which is the last period for which I have been able to obtain figures, the total number of admissions and readmissions from migrants, including British and European, was 3125. Not all of these cases are "missed" cases in the sense that the patients were suffering from active mental disease on selection. Presumably there is a basic rate for the occurrence of mental disease in any national group, just as there is a fairly level incidence rate in the Australian population. In addition to this hereditary group, as we may call it, the migrant has had many other trials and tribulations. Even the problems of fitting into his new country—the process of assimilation—are not conducive to mental relaxation. Separation of families, shortages of housing, shortages of money, lack of congenial employment and similar social problems face many migrants. The interesting problem is how far the final mental collapse has been due to inherent mental instability, and how far it has been precipitated, first by the preembarkation mental stresses to which the migrant has been exposed, and secondly by the difficulties of realizing mental peace in the new country. I am hoping that this meeting may throw some light on the problem.

#### Summary.

The migration programme following World War II has had a major impact on all aspects of Australian life. One million migrants means that one in 10 of the Australian population is new to our way of life.

This creates problems for the nation, and even more so for the migrant. Migrants have varying reasons for coming to Australia, such as the search for greater economic security or higher standards of living, the search for employment, the escape from the threat of war, and the search for a new homeland when driven from the old.

Each group has been subjected to mental stress varying with the conditions experienced during and after the war and the reason for migration. Some still undergo mental tension during the period of assimilation into the new country.

The medical selection can be based only on the evidence available at the time of selection. The diagnosis of mental disease is not easy; but the use of a foreign language, the absence of medical records and a shortage of trained psychiatrists in the particular countries make it even more difficult. Compassionate circumstances arise in a number of cases in order that families may be reunited; but the degree to which compassionate circumstances should influence selection is a problem in itself.

Only recently have the figures for admissions to mental hospitals in Australia been kept in regard to national origin or length of time in Australia, and even now they are not complete. However, they would indicate that the early groups of migrants—coming from recent experiences as prisoners of war or civil inmates of concentration camps—exhibited more mental instability than migrants coming later, or with a background of less emotional tension.

The interesting problem is how far social problems and mental tension due to difficult conditions of existence precipitate the onset of obvious mental disabilities.

# DIFFICULTIES IN THE DIAGNOSIS OF NEUROTIC SYNDROMES.<sup>1</sup>

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Two sources provide the psychiatric department of a general hospital with the bulk of its patients. From other departments in the hospital patients are referred who have been admitted with tentative diagnoses of organic disease. Their hospital investigations have given negative results, the findings are inadequate for an understanding of the symptoms, or information has been obtained that suggests a psychiatric diagnosis. The other source is the local physician, who refers the patient directly to the department, where he is usually examined by appointment. These two sources are widely divergent. On the one hand a psychiatric diagnosis has been made in the daily run of general practice; on the other, a psychiatric illness has been recognized often after costly hospitalization and investigatory procedures, or ineffectual treatment that may have included surgical measures. Exceptionally, a patient may be admitted to hospital for a combined medical and psychiatric investigation, or the physician may refer a patient on whom he has had a consultant's opinion and has been advised to seek a psychiatric investigation.

The object of this study is to discover the difficulties that have led to a failure to reach an early diagnosis of neurotic illness in those patients ultimately referred for psychiatric opinion after hospital investigation. The study has been confined to neuroses because of the now widely known incidence of these illnesses in the sick population. Pemberton (1951) found an incidence of neuroses of 10% in medical patients in a general hospital, and recently Pougher (1955) confirmed once again the incidence in general practice, his figure being 36.2%. Incidences of this order make it all the more important that early, accurate diagnosis of neuroses should be reached to avoid unnecessary suffering and to relieve strain on hospital economy.

## Clinical Material.

After the exclusion of cases in which there remained some doubt as to diagnosis, and those in which the patients had been admitted to hospital for a combined medical and psychiatric investigation, 60 patients—41 females and 19 males—were available for the study who had been admitted to hospital with tentative diagnoses (Table I) of organic disease. They had eventually been referred for psychiatric investigation and a firm diagnosis of a neurotic illness had been made. The sexual distribution, with a preponderance of females in the ratio 2:1 over males, is in keeping with, though less than, that reported by Pougher (1955).

It has been possible to select from those who had been referred directly by local physicians a comparable group of 60 patients with firm diagnoses of neuroses. One of the difficulties in psychiatric clinical studies is the provision of adequate control series (Zubin, 1953). In the present instance, what will henceforth be referred to as the control group were matched for sex, marital status and age. In the last of these variables a close matching with females below the age of thirty years (Table II) was impossible from the material available. Though the differences are statistically of little significance ( $P$  is 0.10 to 0.20), they are nevertheless suggestive, well illustrating the kind of difficulty that is met with.

## Diagnosis.

Three neurotic syndromes—namely, conversion hysteria, anxiety states with hysterical features, and anxiety states—provide sufficiently distinct diagnostic entities for the purposes of this study. As to definition, conversion hysteria is used here to signify the presence of a persistent gross symptom such as hemiplegia, convulsions or emesis, which overshadows the rest of the clinical picture and is accom-

panied by a lack of overt emotional concern; anxiety states with hysterical features refer to those conditions distinguished by transient disturbing symptoms such as vertigo, paræsthesia, dysphagia, and bodily pains in association with some feelings of tension, and accompanied by some degree of overt anxiety; anxiety states encompass conditions of persistent tension, preoccupation with personal problems and health, feelings of depression, and pronounced overt anxiety. Detailed psychiatric assessment gave sufficient clinical information to allow these diagnostic criteria to be applied without difficulty. The following cases are typical examples of each syndrome.

TABLE I.  
Tentative Diagnoses on the Patients' Admission to Hospital.

Diagnosis.	Number of Cases.
Alimentary diseases .. .. .	14
Cerebral space-occupying lesions .. .. .	11
Other cerebral or cranial diseases .. .. .	8
Endocrine diseases .. .. .	8
Cardio-vascular diseases .. .. .	6
Spinal cord diseases .. .. .	5
Gynaecological diseases .. .. .	5
Bone diseases .. .. .	1
Renal disease .. .. .	1
Hepatic disease .. .. .	1
Total .. .. .	60

CASE I.—The patient was a female, aged thirty-five years, and the diagnosis was conversion hysteria. She had been admitted to the neurosurgical ward with a provisional diagnosis of a cerebral space-occupying lesion. Over a period of a month she had had progressive paralysis of the right arm and leg, so that now she had hemiplegia and was bedridden. More recently the right side of her face had begun to twitch spasmodically. Speech had become slurred,

TABLE II.  
Age.

Age Group. (Years.)	Male Patients.	Female Patients. <sup>1</sup>	Total.
20 and under:			
Hospital patients .. .. .	1	8	9
Controls .. .. .	0	2	2
21 to 30:			
Hospital patients .. .. .	9	5	14
Controls .. .. .	9	13	22
31 to 40:			
Hospital patients .. .. .	5	13	18
Controls .. .. .	5	13	18
41 to 50:			
Hospital patients .. .. .	2	9	11
Controls .. .. .	3	7	10
51 to 60:			
Hospital patients .. .. .	1	5	6
Controls .. .. .	1	6	7
61 and over:			
Hospital patients .. .. .	1	1	2
Controls .. .. .	1	0	1

<sup>1</sup> $\chi^2 = 7.45$ ,  $n = 4$ ,  $P = 0.10$  to 0.20.

and now she could talk only in a whisper. Despite the severity of her symptoms she showed no overt anxiety, and indeed appeared casually indifferent about them. Clinical examination failed to reveal any evidence of cerebral disease. Within a few days of her admission to hospital her symptoms were spontaneously remitting.

CASE II.—The patient was a male, aged thirty years, and the diagnosis was anxiety state with hysterical features. He had been admitted to a general medical ward with a tentative diagnosis of cerebral disease causing dementia. For several months he had had increasing difficulty with recent memory. At times he remembered some things but forgot others. He had fleeting choking sensations and difficulty with swallow-

<sup>1</sup>Read at a meeting of the Australasian Association of Psychiatrists on October 26, 1955, at Canberra.

ing. There were also episodes of extreme fatigue; occasional feelings of tension contributed to his general discomfort. He was concerned about his illness and was overtly anxious. Before he was referred for psychiatric examination, the completely negative neurological findings had included those from lumbar puncture with cerebro-spinal fluid assay and radiographic examination of the skull.

CASE III.—The patient was a male, aged forty-six years, and the diagnosis was anxiety state. He had been referred by his family doctor for psychiatric examination. He had found it difficult to concentrate during the last six months, and was worried that he had made a mistake in selling his old house. He complained that he felt unsettled, could not go on with his work and had difficulty in making decisions.

TABLE III.  
Marital Status.

Marital Status.	Male Patients.	Female Patients.	Total.
Married:			
Hospital patients ..	11	30	41
Controls .. ..	11	31	42
Single:			
Hospital patients ..	8	11	19
Controls .. ..	8	10	18

He suffered from frequent headaches, and sedation was required (p. 377). He felt depressed and miserable. The patient was extremely tense, displaying pronounced overt anxiety.

Table III summarizes the distribution of diagnoses in the two groups of patients. There is a preponderance of conversion hysteria in the hospital group, a preponderance of an anxiety state in the control group, and a fairly equal distribution between the two groups of anxiety states with hysterical features. This pattern of distribution is significant statistically ( $P < 0.001$ ).

#### Symptomatology.

In addition to the predominant symptoms of which he complains, a careful inquiry into the case history of the patient with neurosis will reveal the presence of many other less obvious ones that he may otherwise omit to

TABLE IV.  
Diagnoses.

Diagnosis.	Male Patients.	Female Patients.	Total. <sup>1</sup>
Hysteria <sup>2</sup> :			
Hospital patients ..	9	23	32
Controls .. ..	3	10	13
Anxiety state: hysterical features <sup>3</sup> :			
Hospital patients ..	5	10	15
Controls .. ..	1	11	12
Anxiety state <sup>4</sup> :			
Hospital patients ..	5	8	13
Controls .. ..	15	20	35

<sup>1</sup> For the entire distribution,  $\chi^2 = 15.1$ ,  $n = 2$ ,  $P < 0.001$ .

<sup>2</sup>  $\chi^2 = 11.5$ ,  $n = 1$ ,  $P < 0.001$ .

<sup>3</sup>  $\chi^2 = 0.19$ ,  $n = 1$ ,  $P$  is 0.5 to 0.7.

<sup>4</sup>  $\chi^2 = 15.1$ ,  $n = 1$ ,  $P < 0.001$ .

mention during the first visit to the doctor, because their somewhat nebulous qualities make it difficult for him to describe. To list the great variety of these would be of little value. But an attempt has been made to group them into certain categories to see whether any meaningful trends could be discerned. The methods by which the figures have been obtained do not allow of their being subjected to any satisfactory statistical analysis, and therefore interpretations of them must be cautious.

Headache cover a multiplicity of symptoms referred to the head, from definite pain to sensations of pressure, tightness, bursting and such like. These are more common in the hospital group. Symptoms of somatic dysfunction, palpitations, tachycardia, precordial pain, dyspnea, indigestion, flatulence, "heart burn", diarrhoea, frequency of micturition *et cetera*, are found much more frequently in the hospital group. Listlessness, apathy, lack of energy, and being easily tired by any task mental or physical, have been grouped under the heading lassitude and are found more amongst the hospital patients. On the other hand, feelings of depression, worthlessness, despondency, hopelessness about the future and life in general are more frequent in the control group. Subjective intellectual dysfunction, such as poor memory and difficulty in concentration, was found equally distributed.

TABLE V.  
Symptomatology.

Symptom.	Male Patients.	Female Patients.	Total.
Headache:			
Hospital patients ..	7	23	30 (50%)
Controls .. ..	9	12	21 (35%)
Somatic dysfunction:			
Hospital patients ..	17	37	54 (90%)
Controls .. ..	9	23	32 (53%)
Lassitude:			
Hospital patients ..	8	21	29 (48%)
Controls .. ..	4	16	20 (33%)
Depression:			
Hospital patients ..	7	10	17 (28%)
Controls .. ..	10	14	24 (40%)
Intellectual dysfunction:			
Hospital patients ..	5	8	13 (22%)
Controls .. ..	8	5	13 (22%)

#### Ætiology.

The patients studied present no exception to the general finding that ætiological factors are multiple, residing both in the manner in which the patient copes with the stresses and problems of living in a complex society and in the society itself. Environmental difficulties may seem the more noxious causes, or inadequacies in personality structure appear to be the more potent source of illness. However, a clear-cut distinction between personal and social factors is seldom a real one, though it does serve a useful purpose in discussion.

In this series employment and domestic circumstances have been isolated for the study of environmental factors. When conditions of employment—for example, promotion being dependent on confidential reports, the sudden need to raise a mortgage to continue self-employment, the rigidity of a superior—have been judged as creating a real stress, they have been noted. With a labour shortage of 30,000 in New Zealand (population 2,000,000), real employment stresses are, in fact, comparatively rare. Domestic conditions that have been interpreted as causing current environmental stress are illnesses in the family, either mental in the widest sense to include deviations of personality and behaviour, or physical, resulting in loss of support upon which the patient had been or expected to be dependent—the demands of building a home and rearing a family, or being compelled to nurse aged or other relatives.

Personality structure, early family life and previous health are aspects of the individual from which information about personal factors has been sought. The personality structure has been considered to include intelligence, ego defences, basic emotional drives with which there is difficulty in expression and use, and social responses. What has been looked for in the early family life has been the presence of tensions arising from the disordered behaviour of parents, either in crude forms (for example, alcoholism or sadism), or more subtly in the form of neuroticism or chronic invalidism. The death of a parent in the patient's

childhood leading to rupture of the family was also considered significant. The history of previous ill-health, if started by frequent illness, especially neurotic or psychosomatic in quality, and what many patients called "nervous breakdowns", was noted as significant of a pattern of individual reaction to stress. Such patterns were found in some cases to bear a similarity to patterns of ill-health displayed by parents.

My own bias is probably reflected in the finding (Table VI) that personal factors appear to play an overwhelmingly important part in the aetiology. But such a finding could be anticipated from the numerous similar findings that have been made previously. There is little difference in the incidence of personal factors in each group. The somewhat higher incidence of environmental factors in the hospital group is possibly suggestive, but beyond this one cannot go.

TABLE VI.  
Aetiology.

Aetiological Factors.	Male Patients.	Female Patients.	Total.
<b>Environmental Factors.</b>			
Employment:			
Hospital patients ..	6	6	12 (20%)
Controls ..	6	3	9 (15%)
Domestic:			
Hospital patients ..	7	23	30 (50%)
Controls ..	4	20	24 (40%)
<b>Personal Factors.</b>			
Personality:			
Hospital patients ..	17	38	55 (92%)
Controls ..	18	36	54 (90%)
Family:			
Hospital patients ..	15	27	42 (70%)
Controls ..	11	34	45 (75%)
Previous health:			
Hospital patients ..	11	31	42 (70%)
Controls ..	10	31	41 (68%)

#### Discussion.

A number of the hospital patients had been admitted from areas well outside that served by the general hospital and had already undergone hospital investigation before their admission. Their provisional diagnoses were thought to necessitate further investigation and treatment at a centre where special facilities existed. The control group of patients were mostly referred by local physicians. An assumption which may be quite unjustified is being made here, that the hospital patients represent a special and general difficulty in diagnosis. That local physicians referred patients represented in both groups gives some support to the assumption. Moreover, as to the local patients, there was no evidence that certain doctors were responsible mainly for the referrals to the wards and others to the psychiatric department.

The severe and acute presenting symptoms of the hospital group, often akin to those of serious physical illness, seem to have been mainly responsible for the action taken in their management. Apart from the presenting symptoms, however, they displayed a greater incidence of other symptoms, particularly those of somatic dysfunction, than was detected in the control group (90% as against 53%—Table V). Unfortunately, because absolute similarity of investigation cannot be claimed for each patient, such differences in incidence of symptomatology cannot be subjected to statistical analysis. But the psychiatric investigations in all cases approximated closely, being of a routine nature covering the same ground. If this difference of incidence is a true one, and certainly such a conclusion is supported by clinical impression, then it may be thought that insufficient inquiry into somatic dysfunction of emotional aetiology is an omission that can lead to inaccuracy of diagnosis. The nine patients (one male,

eight female—see Table II) aged under twenty years all suffered from conversion hysteria, the presenting symptoms of which obscured a multitude of other symptoms of somatic dysfunction that had not been noted. One can only speculate on whether their youthfulness was significantly connected with the manifestation of the neurosis. The following case illustrates the relevance of somatic dysfunction and a typical history.

CASE IV.—The patient was a female, aged thirteen years, and the diagnosis was conversion hysteria. Two weeks previously she had twisted her left ankle. She was unable to walk because of the pain, and was admitted to hospital with a provisional diagnosis of osteochondritis of the left tarsal scaphoid. On psychiatric inquiry she was also found to be suffering from "black-outs", palpitations, dyspnoea, headaches, and what she called "pins and needles" in her injured foot. Two years earlier she had injured the same ankle, and though pain had quickly gone she was unable to walk on it for a fortnight. Some months earlier, before their emigration to New Zealand, a doctor had said that she, her mother and her brother were all suffering from "nerves". For many years she had had nightmares and night terrors, and she was an avid nail-biter. Her mother had a lump in her back and was suffering from pain in the legs. About this the patient was worried, for she wondered what would happen to herself if her mother died. The father was a restless, somewhat impulsive individual, and had taken work in several countries in the previous few years, his family going with him. The patient was a timid, shy, sensitive, immature girl, who blushed often during interview. She preferred her own company, for she had always felt anxious when with other children, thus finding it difficult to make friends.

The greater incidence of depressive symptoms in the control group probably reflects their more obvious psychological quality. Firstly, the patient is likely to complain of his disturbed emotional state in clearly subjective terms, as well as to express ideas that are readily interpreted as morbid. Secondly, the physician can directly observe the alteration of mood that is a feature of the depressive reaction.

There are other more subtle features of an hysterical illness that are clinically important and have to do with the personality structure rather than the frank symptomatology. Whilst it is probably true that all patients omit from their histories information that is germane to their cases, this phenomenon is a notorious feature in hysteria, in which repression as an ego defence is a characteristic of the psychopathology. That omissions have been made can be suspected when a review of the case history reveals persistent gaps. Should there be any question of diagnosing hysteria, it is as well to have information about the patient from a close relative or friend. What may be called the martyr attitude is another feature. The patient gives or tries to give the impression that he is putting up with great discomfort both personally and socially without complaint, and this impression is enhanced by the apparent lack of emotional distress. This attitude is seldom isolated, but is usually interrelated with a highly critical attitude towards persons of emotional significance to the patient. The criticisms initially may seem justified, but careful assessment should reveal their irrationality. The martyr and critical attitudes are also reflections of ego defence mechanisms operative in hysteria.

Though a complete symptomatology is obtained and psychopathological attitudes are detected, a diagnosis of neurosis can be made only with caution if no information as to aetiology can be discerned. In both control and hospital patients, aetiological factors (Table VI) in every case were obtained, and there were no significant differences in the aetiology in both groups. As far as can be judged, the more acute presenting symptoms of the hospital group had distracted from inquiry into revealing personal history.

Personal factors are of the utmost importance and inquiry should always be made in this direction. In a very great number of patients with neuroses, evidence of disorder of personality structure will be found, such as difficulty in the control and expression of emotion leading to passivity, impulsiveness and indecision, social ineptitude resulting in solitariness, anxiety in the presence of people who are not very well known, or strongly emotional, short-lasting relationships with a succession of people. In con-

version hysteria difficulties with sexual attitudes are usually found. In this series the level of intelligence played no part as a generally significant aetiological factor. Three patients out of the 120 were high-grade mental defectives, and there were several others of dull and backward intelligence. In these the intelligence factor was indeed important. Some of the stresses with which these patients were coping inadequately could be attributed to their intellectual disability.

Clearly the physician must have certain skills and concepts if he is to make a diagnosis of neurosis with confidence. He must possess an adequate interview technique and an appropriate conceptual frame of reference to interpret the findings. Many years ago Ross (1937) covered this ground in his classic monograph. More recently the Commonwealth Fund (1947) has gone into the problem explicitly and reported on an interview technique that has much to commend it. Furthermore, if the physician asks the right questions of himself (Halliday, 1948), his approach to the patient will be orientated so as to get the necessary understanding of the illness. Simple psychological tests are of considerable help, and their use in medical practice has lately been discussed (Ironside, 1955). Special mention can be made of the self-administered "Cornell Medical Index Health Questionnaire" as a fairly accurate indicator of psychological illness.

Finally—and this is a speculation—the frequency of hysteria in these patients is likely to be a reflection of the culture of New Zealand, which is still largely rural and unsophisticated. Physicians working in such communities may well remember the association between culture and the manifestation of neurosis and be watchful for the presence of the disorder.

#### Conclusions.

Despite all that has been written about them, neurotic syndromes continue to be misdiagnosed as organic illnesses as a result of preoccupation with their presenting symptoms. Conversion hysteria especially does not appear to be easily recognized. There is ignorance as to the means of eliciting and understanding the information that would lead to an accurate diagnosis. This is likely to remain until corrective modifications are introduced into medical thinking and the medical curriculum.

#### Summary.

A group of 60 general hospital patients with diagnoses of neuroses are compared with 60 neurotic patients referred direct to a general hospital psychiatric department by local physicians. A significant incidence of hysteria is found in the former group.

The severity of disablement and the acute nature of the presenting symptoms in neurotic syndromes, in particular conversion hysteria, may cause difficulty in arriving at accurate diagnoses.

The need for an adequate interview technique is emphasized because significant psychopathological material is equally available from both groups. Reference is made to the use of psychological tests as investigatory aids.

#### Acknowledgements.

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#### WHITHER THE DISK?

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I HAVE taken the title of this discussion to mean "what is the true place of intervertebral disk lesions in clinical medicine?" and have assumed that treatment is not under particular consideration.

For most of us the intervertebral disk lesions first came to notice as a cause of illness shortly after the last World War, though, of course, they had been described and treated earlier. In providing an explanation and a treatment for many disabilities in otherwise healthy people, this new knowledge led to a wave of enthusiasm to inculcate the "disk", and naturally enough this was carried to excess not only by the generality of doctors, but also by leading authorities who should have been wiser, and whose dogmas uttered then have impeded clear thought on the matter since.

When the neurologist and the orthopaedist discuss the subject, they soon discover that to some extent they are considering different types of case. The neurologist who operates upon a patient with a nerve-root disturbance such as sciatica sees the prolapsed disk with the nerve root lying on it, demonstrates it to spectators in the operating theatre, lifts it out, and observes the patient's recovery. No doubt the orthopaedist surgeon commonly has a similar experience; but while the neurologist is usually consulted because the patient has nerve-root pain, the orthopaedist has more commonly the problem of backache without nerve-root pain, and these cases are common and difficult to manage.

Lumbar backache is a common precursor of sciatica in cases of lower lumbar disk herniation; but this is insufficient evidence upon which to base the naive assumption that any chronic or recurrent lumbar backache is due to a defect in the intervertebral disks. However, the fact is that in the minds of most doctors no tissue of the many in the back has quite the reality of the bones and their joints. One reason for this is that we look every day at photographs of the back which show nothing but the skeleton. If by some odd chance a "Y ray" or "Z ray" was discovered which showed only, for example, elastic tissue or collagen or tissue fluid, the bones being translucent, and if we used it instead of X rays for a time, we should develop entirely new conceptions of the processes of disease in our patients. This is not to dismiss disk disturbance as a common cause of backache or even the usual one, but to question the worth of the evidence upon which it is so customarily assumed, despite abundant evidence from clinical experience of other causes of similar symptoms.

The disk prolapse has assumed its proper place as the definitive lesion in several well-known syndromes of nerve root irritation and compression and as one cause of extradural spinal cord compression. Its situation, size, consistency and rate of formation determine in the main its clinical effects. It is important to recognize disk prolapse as part of the injury in vertebral column fracture-dislocations. The X-ray film which demonstrates a return to normal alignment of a vertebral injury fails to reveal the mass of disk material which remains in the spinal canal and maintains a compression paraplegia.

The X-ray picture cannot possibly exclude a disk prolapse. Plain X-ray films in all postures with the further aid of myelography may fail to discover any abnormality even in a case of the grossest severity.

Mr. S., aged thirty-two years, was admitted to Sydney Hospital in 1953 with tetraplegia of gradual onset. Plain X-ray pictures in all postures revealed no abnormality. Two myelographic examinations revealed no abnormality. The opinion of a visiting neurologist from England was "glioma of upper cord". Laminectomy was performed, and disk prolapse at the level of the second and third cervical vertebrae was found, with absolute transverse destruction of the spinal cord. No recovery was possible.

<sup>1</sup>Read at a meeting of the New South Wales Branch of the British Medical Association on May 31, 1956.

The onset of the condition was over a period of a year, during which laminectomy was not performed because of X-ray evidence. The moral is, never let the X-ray findings exclude the diagnosis, however helpful they may be in giving confirmatory evidence in some cases.

Mr. L., aged twenty-four years, was examined in 1952 because of right sciatica of great severity relieved twice by four weeks' rest in bed, and a recurrence after three weeks' reduced activity. There were no abnormal neurological signs, and no abnormalities were detected in plain X-ray films. Considerable relief was obtained from injection of three places of especial tenderness in the lumbar region and the buttock. There was no lasting benefit, and the pain was intense. An orthopaedic surgeon was consulted; he performed a spinal manipulation, which led to severe intensification of the pain. A myelographic examination revealed no abnormality. There were still no neurological signs. Laminectomy was performed, the only guide being the area of pain, and a hard prolapsed disk was removed, with immediate and lasting recovery.

It is important to realize that, despite the presence of a damaging disk prolapse in the spinal canal, the intervertebral interval in the X-ray film may be quite normal; and, conversely, that narrowing of the interbody interval in the X-ray film does not make a diagnosis of prolapse.

The disk lesions may settle down after hurting a nerve root, but there may be lasting damage of the root causing symptoms. An example of this is fixation of the root to the disk or to another part of the intervertebral foramen. Normally a nerve root in the lower lumbar region has about 1.5 centimetres of sliding mobility in the intervertebral foramen between the standing and stooping positions. One can expect traction radiculitis to follow fixation. Certainly root section is curative in a true case. The whole subject of mechanical lesions of spinal nerve roots is beyond the limits of this discussion, and the example given is enough to draw attention to the fact that simple prolapse compression is by no means the whole story.

When a disk in losing substance becomes thinner, the apophyseal joints at the same level become malaligned and so are likely to become another source of pain. However, a softened disk can at some levels cause prolapse of enough material or can bulge enough without herniation to affect a nerve root without perceptible thinning in a lateral X-ray film, even in flexion.

In the thorax, disk prolapses are dangerous, as the smaller spinal canal endangers the cord earlier in the development of a lump of any kind.

In the neck, acute disk prolapses usually cause brachial plexus pain syndromes. However, the anatomy of the upper limb is such that similar symptoms may be caused in other ways—extraspinal in the neck, at the wrist, occasionally at the elbow. Diagnosis may be difficult, and the several possibilities must be remembered.

At all levels above the second lumbar vertebra, the disk lesion may produce its effects upon the cord by affecting its blood supply. The anterior spinal artery is especially endangered, and the syndromes resulting from backward bulging of several cervical disks are well known. They may closely resemble serious degenerative diseases primary to the neuraxis. Myelography may assist in making the important distinction leading to treatment which can arrest the process when the lesion is primarily skeletal.

During several years I have noted a number of cases in which classical "disk" syndromes have resulted from entirely different conditions. These include chronic lesions presenting acutely, traumatic lesions presenting chronically, infective (even purulent) lesions presenting chronically without any indication of infection until the pus was found at operation, tumours, hematomata, angiomata, and congenital abnormalities; again there have been a number of "disk" cases presenting in the guise of a different type of condition—for example, the first case noted above (Mr. S., Sydney Hospital, 1953).

In considering the prognosis of "disk" cases and the value of treatment, one must begin by deciding what cases one will include. For my part I cannot include the many cases of sore backs, merely because someone thinks they

should be disk lesions. Experience of other painful back lesions forbids. Restricting the term to the non-controversial group, I would regard the prognosis under treatment as good and very satisfying.

The details of treatment are outside this discussion; but I would make a plea for the abandonment of a policy which often condemns a patient to six or eight weeks off work every year, often just when it is most damaging to his business. In relation to operation, it should be remembered that the technique varies greatly, and that it has altered very much in the last few years. This applies even more to the technique of exposure than to that of spinal fixation, which is occasionally needed.

The disk lesions have become a very common problem at law, especially before the judges of the Workers' Compensation Commission, who need clear advice from medical witnesses about them. This subject includes all that is controversial in the matter within the medical profession, and is itself a long argument; but in one way these cases reproduce an old legal problem—the problem of the "railway spine".

One of the most absorbing subjects in clinical medicine is the "body-image". It can be variously conceived, from a parietal homunculus, to the intricate varying personal body-image of the psychologist, which is, of course, the true one. The back has a special importance in the true body-image. Reflection shows this to be a protective device, leading to constant awareness of, and an instinct to protect, that part of the body which is most vulnerable to the approach of danger from the external world. If this were a psychological paper I should like to say more on this concept. I believe that, as it is fundamental to the occurrence of "railway spine", it must be included in this paper, albeit briefly. In practical medicine it leads me to two conclusions. The first is that the best treatment in "traumatic psychoneurosis" of this kind is group psychotherapy. The treatment for full efficacy must be organized within a rehabilitation centre. The second conclusion is that often it is wise to insist upon withholding definitive treatment, such as operation, until legal proceedings are concluded. This can make the task of the lawyers more difficult and they may protest. It cannot be too strongly stressed, however, that treatment applied under conditions adverse to its success may well initiate or aggravate a psychological lesion accompanying the physical one.

In relation to this, I will conclude by stressing the frequency with which hysterical symptoms accompany an organic lesion, not only in insurance cases with a financial bias, but in any case in which years of medical endeavour have resulted in disappointment. I have many times seen a case dismissed because a "stocking anaesthesia" or other evidence of hysterical overlay happened to be present. This is poor medicine. It is unworthy of our art to dismiss a problem merely because it has become difficult.

## Reports of Cases.

### AFIBRINOGENÆMIA: CASE REPORT OF A CHILD WITH RECURRENT BLEEDING.

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A RARE cause of severe recurrent bleeding is the absence from birth of plasma fibrinogen.

Since the original description by Rabe and Salomon (1920), 23 cases of this condition have been reported in the literature (Pritchard and Vann, 1954).

#### Clinical Record.

A, a girl, aged eleven years, was referred to the Royal Children's Hospital, Melbourne, in April, 1955, for investigation of severe recurrent bruising and bleeding. No

similar history was obtained of bleeding in her grandparents, parents or three siblings. The following report was received from the physician in whose care the child had been for the preceding months. At the age of two years the child had sustained a head injury for which she was given a blood transfusion. She remained in hospital for one month. Since then even minor injuries had resulted in blood loss, with difficulty in securing haemostasis. A head injury when she was six years old again necessitated treatment with blood transfusion. In March, 1955, she received a blow on the knee and developed a haematoma involving the leg below the knee. After bed rest for two weeks she was admitted to a hospital, where a direct transfusion of blood was administered because her haemoglobin value was 6.1 grammes per 100 millilitres.

The child was admitted to the Royal Children's Hospital for further investigation. When examined she was a well nourished girl whose liver was palpable two centimetres below the right costal margin. She had an extensive haematoma of the left leg below the knee. No other abnormality was detected. The Hess tourniquet test for capillary fragility gave a normal result.

#### Laboratory Investigation.

Examination of the peripheral blood gave the following information: the haemoglobin value was 12.3 grammes per 100 millilitres; the erythrocytes numbered 5,300,000 per cubic millimetre and the leucocytes numbered 9300 per cubic millimetre. The differential leucocyte count gave normal results and platelets were present in normal numbers.

Blood withdrawn by venupuncture and placed in clean glass tubes failed to clot after prolonged standing at room temperature and in an incubator at 37° C.

It was not possible to determine the prothrombin time, as clotting did not occur when calcium chloride and rabbit-brain thromboplastin were added to the patient's plasma.

Absence of fibrinogen was suspected at this stage. The patient's plasma was heated for twenty minutes at 58° C., at which temperature flocculation of fibrinogen normally occurs. The plasma remained clear, with no evidence of turbidity or flocculation due to the formation of a heat coagulum.

Estimation of plasma fibrin was attempted by means of the technique of Harrison (1949), but the absence of a coagulum precluded digestion and subsequent quantitative analysis by Nesslerization.

A study of the protein components of the patient's blood was made by paper electrophoresis, with the use of the method of Flynn and de Mayo (1951). Heparinized plasma (0.01 millilitre) from both the patient and a normal control was applied to strips, five centimetres wide, of Whatman's number 2 filter paper. After exposure for sixteen hours to a direct current of five milliamperes at 100 volts in a barbitone buffer at pH 8.6, the paper was dried and stained with bromophenol blue. The well-stained band, indicating the migration of fibrinogen in the normal, contrasted with the absence of a fibrinogen band in the patient (Figure 1).

The results of tests performed on plasma and serum to detect any abnormality or deficiency of the other factors necessary for normal coagulation showed that the patient's blood contained adequate amounts of these factors (Table 1).

The liver of this girl was enlarged, but liver function tests, including estimations of total serum protein content, serum alkaline phosphatase content, bilirubin content and thymol turbidity, gave normal results. When the plasma of the patient was supplied with fibrinogen the prothrombin time was fifteen seconds; this indicated adequate prothrombin formation by the liver.

Fibrinogen survival studies have been carried out in previous cases of afibrinogenemia. This was done in our case, three grammes of fibrinogen in 150 cubic centimetres of normal saline being given to the patient by the rapid intravenous drip method. Twenty minutes after the completion of the transfusion the Lee and White clotting time

was five minutes. The clot formed was small and retraction had not occurred at the end of one hour at 37° C. Two hours later the clot had disappeared. Electrophoresis carried out on the plasma four hours after the administration of the fibrinogen again revealed no fibrinogen band. Forty-eight hours later the blood again failed to clot.

### COMPARISON OF FILTER PAPER ELECTROPHORESIS PATTERNS.

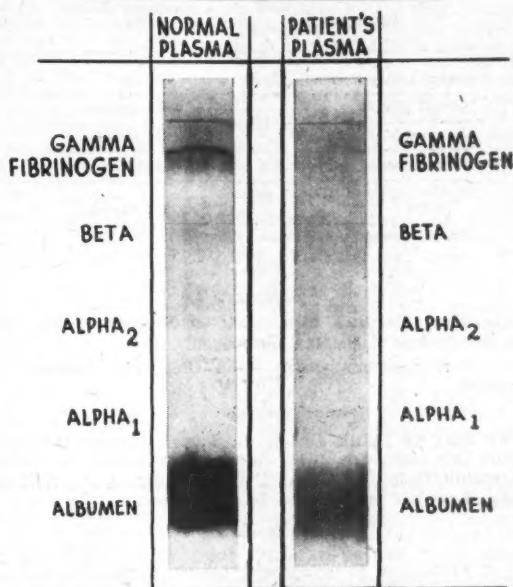


FIGURE 1.

Photograph of filter paper electrophoresis patterns in normal human plasma (left), and in that of the present patient (right) suffering from afibrinogenemia, in which the  $\gamma$  globulin zone is devoid of a fibrinogen band.

#### Comments.

Congenital afibrinogenemia is a rare disorder resulting in failure of the blood to clot. A total or partial lack of fibrinogen may occur with severe liver disease (Wintröbe, 1951) and without liver involvement in carcinoma of the prostate with bone marrow metastases (Jürgens and Trautwein, 1930). Congenital hypofibrinogenemia has been demonstrated, but with a clotting time within normal limits (Henderson *et al*, 1945).

Pritchard and Vann (1954), in their review of 22 cases of congenital afibrinogenemia, found that the outstanding feature was the absence of clot formation from birth. The first report of bleeding in our patient occurred at the age of two years; but apart from traumatic bleeding the child has always remained well, and by both physical and laboratory investigations has shown no evidence of any other abnormality. As clotting could be induced by the addition of fibrinogen, it seems valid to assume that this is a case of congenital afibrinogenemia which became manifest after the neonatal period.

Frick and McQuarrie (1954), in studying the disappearance rate of fibrinogen after transfusion of Cohn's fraction I, found that zero level was reached in twelve days. Lewis and Ferguson (1954) found that the plasma fibrinogen level could be raised promptly to normal limits, whilst only a trace was left eight days later. Gitlin and Borges (1953) showed that after the first two days the fibrinogen followed a logarithmic decay curve, with a half life of four days.

A much more rapid rate of disappearance took place in our patient. Four hours after the administration of the

fibrinogen solution the electrophoretic pattern showed no fibrinogen peak, and forty-eight hours later the blood was again incoagulable. Electrophoresis would not detect amounts smaller than 5% of normal, but clotting should occur with only 1% of the normal level present.

TABLE I.  
The Effect on the Recalcified Clotting Time Produced by the Addition of 0.01 Millilitre Volumes of Certain Reagents to 0.1 Millilitre Volumes of the Patient's Plasma.

Added Reagent.	Recalcified Clotting Time.
Patient's own plasma . . . .	∞
Normal plasma . . . . .	270 seconds
Hæmophilic plasma . . . . .	270 seconds
Stored plasma . . . . .	240 seconds
Barium sulphate treated normal plasma . . . . .	270 seconds
Normal serum . . . . .	∞

#### Summary.

Abnormal bleeding in a girl, aged eleven years, was due to absence of plasma fibrinogen.

The investigations which established this diagnosis are recorded.

#### Acknowledgements.

We wish to thank Dr. M. L. Powell for permission to report this case. Dr. J. H. Colebatch examined the patient in consultation. Dr. J. W. Perry and Dr. A. L. Williams assisted in the preparation of this paper.

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#### Reviews.

**Taylor's Principles and Practice of Medical Jurisprudence.** Edited by Sir Sydney Smith, C.B.E., LL.D., M.D. (Edin.), Hon. M.D. (Louvain), D.P.H., F.R.S. (Edin.), assisted by Keith Simpson, M.D., Lond. (Path.), the legal aspect revised by Gerald Howard, Q.C., M.P., psychiatry and the law contributed by David Stafford-Clark, M.D., M.R.C.P., D.P.M., the chemical aspect revised by I. C. Nickolls, M.Sc., A.R.C.S., F.R.I.C.; Eleventh Edition, Volume I; 1956. London: J. and A. Churchill, Limited. 32 x 6", pp. 633, with illustrations. Price: £3 10s.

VOLUME I of "Taylor's Principles and Practice of Medical Jurisprudence" appears again in the eleventh edition. This book perhaps is the best known reference work on medico-legal problems. It is used extensively by medical practitioners and members of the legal profession alike, and it is one that is frequently produced in court when contentious medico-legal matters arise.

Formerly edited by Sir Sydney Smith, this new edition has a co-editor, Dr. Keith Simpson, of London. The changes in this volume are set out by Sir Sydney Smith in the preface. He writes: "In this new edition a somewhat more radical revision has been attempted in order to keep 'Taylor' abreast of the times. Several sections—notably those on post-mortem changes—on intersexuality as an identity problem; on the general procedure of criminal investigation; on regional wounds; blood in identity, trauma and disease—and the sections on asphyxia and on life assurance have been very largely rewritten. No less than 292 new cases have been introduced into the first volume, together with some 40 new illustrations."

Recent years have brought to light some notable advances in forensic medicine. Some older and well ingrained ideas have had to give place to modern thinking and research. Modern writing is reflected in the text of this new edition. That the subject has grown so much in recent years and is now beyond the scope of any one medico-legal expert is obvious in this volume.

The question of medical negligence is discussed in the light of some recent law cases. Trotter and Gleser's work for calculating height from dead long bones is included. The section on asphyxiation has been brought up to date and some previous medico-legal mythology disposed of. There is a wealth of illustrative material. These case reports are of great value and many of them emphasize how wary the doctor should be in formulating opinions.

The impact of Dr. Keith Simpson on this book is obvious. Volume II will be eagerly awaited.

**A Course in Practical Therapeutics.** By Martin Emil Rehfuess, M.D., F.A.C.P., LL.D. (Hon.), and Allison Howe Price, A.B., M.D.; Third Edition; 1956. Baltimore: The Williams and Wilkins Company. Sydney: Angus and Robertson, Limited. 11" x 9", pp. 989, with illustrations. Price: £8 6s.

This book is a straightforward work in every aspect of medical treatment. There are 988 pages in the volume. It is a large book, but in modern times, and with the spate of new drugs, it is difficult to know what to exclude. In this treatise are included chapters on diet, general therapeutic principles, symptomatic treatment for almost every conceivable symptom, and treatment for specific disorders, medical, surgical, cutaneous and the rest. There are 100 plates illustrating, in ink and in colour, aspects of disease and methods of treatment.

The methods described are sound and detailed. A chapter on special treatment includes up-to-date information about antibiotics, sulphonamides, cortisone and allied preparations.

The 25 contributors on the subject of therapeutics are all doctors of high standing in America, and many of them are world figures.

**Endogenous Uveitis.** By Alan C. Woods, M.D.; 1956. Baltimore: The Williams and Wilkins Company. Sydney: Angus and Robertson, Limited. 10" x 7", pp. 319, with illustrations by Annette Smith Burgess. Price: £6 17s. 6d.

ALAN C. WOODS is emeritus professor of the Wilmer Institute of Ophthalmology of the Johns Hopkins Medical School, Baltimore, United States of America. He has achieved distinction as a teacher, investigator and practitioner of ophthalmology. His main research has been with uveitis—a disease accompanied by pain, distress and even blindness for the patient, and frequent humility or depression for the ophthalmologist. This volume is a presentation of his unique experience. It is clearly written and illustrated.

The subject matter is systematically presented in the following order: pathogenesis, clinical picture and pathology, aetiological diagnosis and treatment. The separation of granulomatous from non-granulomatous uveitis is maintained and defended. The granulomatous form is said to be due to invasion of the uvea by the live causative agent, whereas the non-granulomatous type is considered to be the result of a sterile insult usually due to bacterial hypersensitivity. However, the author has obvious difficulty in reconciling the granulomatous nature of sarcoid and sympathetic ophthalmia with the absence of demonstrable infection and the response to steroid therapy.

The various aetiological agents, the clinical tests for their diagnosis and their medical treatments are described with extensive detail, so that the book serves as a useful reference for these facts that are difficult for the clinician to remember. Information can be readily found owing to the detailed index and to the clear headings of the chapters and their subdivisions.

The present book is the outgrowth of a small teaching manual published in 1948, because within five years the information previously presented had become hopelessly out of date. Uveitis is pursued very actively in many research centres and the state of journal publications is difficult to assess. This volume is a valuable contribution in being a summary of present-day knowledge by a recognized authority. As such it must be one of the current standard references of such a difficult subject.

The publishers are also to be congratulated on such a fine presentation.

**Urological Surgery.** By Austin Ingram Dodson, M.D., F.A.C.S.; Third Edition; 1956. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical), Limited. 9 1/2" x 7", pp. 868, with many illustrations. Price: £11.

The appearance of a third edition of A. I. Dodson's "Urological Surgery" so soon after its predecessor is an indication of its excellence. The same high standard is maintained, although the main body of the work, the section on operative procedure, is unchanged except for some modernization and additional illustrations.

To accommodate the changes within the same compass radiation therapy has been omitted and the sections on acid-base balance, fluid administration, blood transfusion and shock have been abbreviated and incorporated in chapters on pre-operative and post-operative management. The neurogenic bladder receives more detailed discussion and the material is arranged more clearly. Chapters on the suprarenal gland and on ureterosigmoidostomy have also been rewritten, but, rather curiously, that dealing with the progressive subject of endocrinology has been left unchanged "as a tribute to the late Linwood D. Kayser". The treatment of stress and post-operative incontinence of urine has been expanded to include the most modern operations.

In some respects the methods recommended are open to criticism. The technique described for cystostomy makes it appear a formidable procedure liable to many and serious complications; consequently the description of suprapubic prostatectomy is involved and lacks clear detail. "The advantages of vision will not compensate for the disadvantages of trauma caused by efforts to expose the gland" evidently expresses the author's opinion on open intravesical operations generally. There is no mention of the value of a self-illuminated retractor, and haemostasis is usually obtained by some form of packing instead of by suture. Possibly for the same reason there is a preference for the vaginal route for such operations as repair of vesicovaginal fistula and vesical lithotomy.

Despite such individual defects, this is a most useful and practical book. The admirable combination of large, clear illustrations and lucid prose immediately commends itself. As compared with the previous edition, the indexing is more accurate and there is a welcome absence of typographical errors. It is to be recommended as a very satisfactory reference book for urological operative procedure and gives a good impression of current American practice.

**Cardiac Pressures and Pulses: A Manual of Right and Left Heart Catheterization.** By Aldo A. Luisada, M.D., and Chi Kong Liu, M.D.; 1956. New York, London: Grune and Stratton, Incorporated. 7" x 10", pp. 123, with illustrations. Price: \$6.00.

ALTHOUGH this book will have its greatest appeal to those who are interested in investigative cardiology, it will, nevertheless, have some interest for the more serious-minded physician. It must be anticipated that many of the concepts elaborated within its hundred pages will one day be incorporated into everyday medical diction. For that reason it is recommended for wider attention than by the pure specialist.

The monograph in its earlier chapters details the procedures of left and right heart catheterization and gives a short résumé of the dynamic events of the cardiac cycle. In the later chapters, the normal and abnormal pressure patterns obtained from all heart chambers are explained and illustrated. For those especially interested in the interpretation of the results of cardiac catheterization there is a useful chapter on the artifacts produced by faulty techniques.

The monograph is well illustrated from the records which have been obtained by the two authors. The writing at times presupposes an intuitive knowledge of the subject, without which some of the text is difficult to comprehend (for example, page 9 (c): the pericardial sac is expanded and its complementary sinuses open—favouring diastole).

We would disagree with some of the ranges of normal values quoted and wonder why the phonocardiogram has almost exclusively been used as the reference tracing instead of the electrocardiogram. Nevertheless the publication should find a place in all reference libraries.

**Ciba Foundation Colloquia on Ageing: Ageing in Transient Tissues.** Edited by G. E. W. Wolstenholme, O.B.E., M.A., M.B., B.Ch., and Elaine C. P. Millar, A.H.W.C., A.R.I.C.; Volume II; 1956. London: J. and A. Churchill, Limited. 8 1/2" x 5 1/2", pp. 274, with 96 illustrations. Price: 36s.

EARLY in 1954 a symposium was held by the Ciba Foundation on "General Aspects of Ageing". Towards the middle of 1955 another symposium was held dealing with studies on the ageing of tissues, the normal life of which is shorter than that of the organism as a whole, and the papers and discussions have been published in the volume under review. It was hoped that the inferences drawn from the study of changes in these shorter-lived tissues might throw some light on the ageing of the body. Thirty-four papers were presented, and there was full discussion on each. There is a wide range of subjects. Almost half the book is taken up with the changes in germinal tissues. Other subjects treated are the growth cycle of deer antlers, ageing of axillary apocrine sweat glands in the human female, the metabolism of senescent leaves and ageing in human red cells. The discussions following each paper are very stimulating and the symposium ended with a general discussion. Much of the last discussion is taken up by endeavours to define ageing and senescence, without much success. While much interesting material was presented in the various papers, there is not much evidence to show that an understanding of age changes in the body is much nearer. The papers are all of the high standard expected in the Ciba Foundation publications. The book is essentially one for specialists in gerontology, although there is much to interest any medical man or biologist.

**Synopsis of Genitourinary Diseases.** By Austin I. Dodson, M.D., F.A.C.S., and J. Edward Hill, M.D.; Sixth Edition; 1956. St. Louis: The C. V. Mosby Company. Melbourne: W. R. Ramsay (Surgical), Limited. 7 1/4" x 5", pp. 330, with 124 illustrations. Price: £3 15s. 8d.

DODSON'S "Synopsis of Genitourinary Diseases" continues its popularity, and a new edition marks the sixth since 1934. J. Edward Hill has joined the original author, and many alterations appear, particularly in the therapeutic field. It is a pity that mostly American trade names are used when the sulphonamides are mentioned, but short sections on nitrofurantoin and the antibiotics are in accordance with current practice. Novobiocin is not listed.

A new section on minor urological surgery has been added, and this chapter is undoubtedly one of the major attractions of the book.

The chapter dealing with non-tuberculous infections has been extensively revised. The difficult subject of prostatitis is well handled, and more help is given with impotence than usual. The importance of a testicular biopsy in azoospermia before Hagner's operation is undertaken is, however, not noted.

As the senior author has stated in the preface to the first edition, the object is to present the recognized principles of the practice of urology, with the indications for cystoscopy, and other specialized methods used in diagnosis and treatment. This has been attained with a clear, well-set-out, accurate and very readable text, and there is no doubt that this book can be well recommended both to the student and to the qualified practitioner.

**Heart Disease: Including Coronary Thrombosis, Angina, Endocarditis, Tachycardia, Heart Failure, Rheumatic Heart Disease.** By Geoffrey Bourne, M.D.; 1954. London: Gerald Duckworth and Company, Limited. 7 1/4" x 5", pp. 136, with four text figures. Price: 8s. 6d.

THIS book is written with the expressed intention of satisfying the layman's thirst for information concerning heart disease. Lord Horder, the general editor of this series, writes that "it is the object of this series of books to give precise authoritative information; to take the patient into the doctor's confidence so that both work together to get the patient better". Certainly in the first of these objects this book succeeds admirably. It is an easy book to read and presents a brief, yet wisely balanced, survey of the commoner forms of heart disease.

There is a summary of the anatomy and physiology of the heart, and there are also two chapters on symptoms and

signs and a rational discussion of the problems of exertion and exercise tolerance in heart disease.

This book, although written for the layman, may equally well appeal to the medical student in his early years. It gives a concise overall picture of the clinical aspects of cardiology, as well as sound descriptions of specific diseases and the fundamentals of their management based on accepted physiological principles.

The tone of the book is one of well-considered and rational optimism. No doctor need hesitate to recommend this book to the patient who desires to benefit from a more detailed insight into his disease.

## Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Pediatric Clinics of North America: Symposium on Pediatric Dermatology"; 1956. Philadelphia and London: W. B. Saunders Company. Melbourne: W. Ramsay (Surgical), Limited. 9" x 6", pp. 365, with illustrations. Price: £6 15s. per annum.

There are 26 contributors and 17 contributions. The illustrations, which are well produced, include four coloured plates.

"The Surgical Clinics of North America"; International Number; 1956. Philadelphia and London: W. B. Saunders Company. Melbourne: W. Ramsay (Surgical), Limited. 9" x 6", pp. 360, with illustrations. Price: £8 2s. 6d. per annum with cloth binding and £6 15s. per annum with paper binding.

Comprises a symposium on new operations. There are 22 articles with 43 contributors.

"A Text Book of Pathology", by E. T. Bell; Eighth Edition; 1956. Philadelphia: Lea and Febiger. Sydney: Angus and Robertson, Limited. 9½" x 6", pp. 1028, with 545 illustrations and five colour plates. Price: £7 19s. 6d.

The first edition appeared in 1930; in this edition the author has had the assistance of two contributors, B. J. Clawson and J. S. McCartney.

"Anesthetic Accidents: The Complications of General and Regional Anesthesia", by V. Keating; 1956. London: Lloyd-Luke (Medical Books), Limited. 8½" x 5½", pp. 269. Price: £5s.

The author attempts to review the causes of anesthetic accidents of which he became aware during a period of military service; he tries to indicate prevention and treatment.

"Clinical Urology", by Oswald Swinney Lowesley, A.B., M.D., F.A.C.S., F.I.C.S., and Thomas Joseph Kirwin, M.A., M.S., M.D., F.A.C.S., F.I.C.S., with drawings by William P. Didusch. Third Edition; Volume I and Volume II; 1956. Baltimore: The Williams and Wilkins Company. Sydney: Angus and Robertson, Limited. 11½" x 8½", pp. 985, with many illustrations. Price: £17 17s. 6d.

The first edition was published in 1940.

"Medicinal Chemistry", edited by F. F. Blicke and R. H. Cox; Volume III, 1956. A Series of Reviews Prepared under the Auspices of the Division of Medicinal Chemistry of the American Chemical Society. New York: John Wiley and Sons, Incorporated. London: Chapman and Hall, Limited. 9" x 6", pp. 364. Price: \$10.50.

Contains papers on methadone and related analgesics, quarternary ammonium germicides, non-mercurial diuretics and synthetic analogues of physostigmine.

"The Queen Charlotte's Text-Book of Obstetrics", by G. F. Gibberd, M.B., M.S., F.R.C.S., F.R.C.O.G., W. R. Winterton, M.B., F.R.C.S., F.R.C.O.G., H. G. E. Arthur, M.D., F.R.C.S., F.R.C.O.G., Briant Evans, M.B., B.Ch., F.R.C.S., F.R.C.O.G., Kathleen M. Robinson, M.D., F.R.C.S., F.R.C.O.G., S. G. Clayton, M.D., M.S., F.R.C.S., F.R.C.O.G., T. L. T. Lewis, M.B., B.Ch., F.R.C.S., M.R.C.O.G., J. S. Tomkinson, M.B., Ch.B., F.R.C.S., M.R.C.O.G., and Charles D. Read, M.B., Ch.B., F.R.C.S., F.R.A.C.S., F.R.C.O.G., Thomas Hunt, D.M., F.R.C.P., A. White Franklin, M.B., B.Ch., F.R.C.P., E. Rohan Williams, M.D., F.R.C.P., F.F.R., D.M.R.E., J. Murray, M.D., G. W. B. James,

C.B.E., M.C., M.D., D.P.M., and Geoffrey C. Steel, M.R.C.S., L.R.C.P., F.F.A.R.C.S.; Ninth Edition; 1956. London: J. and A. Churchill, Limited. 9½" x 6½", pp. 559, with four coloured plates and 246 text figures. Price: 45s.

All methods described are those used at the Queen Charlotte's Maternity Hospital, London, to which all the authors are obstetric surgeons.

"Textbook of Human Anatomy", by J. D. Boyd, M.A., M.Sc., M.D., Sir Wilfred E. Le Gros Clark, M.A., M.D., D.Sc., LL.D., F.R.C.S., F.R.S., W. J. Hamilton, D.Sc., M.D., F.R.S. (Edinburgh), J. M. Yoffey, D.Sc., M.D., F.R.C.S., Sir Solly Zuckerman, C.B., M.D., D.Sc., F.R.S., and the late A. B. Appleton, M.A., M.D., Edited by W. J. Hamilton. 1956. London: Macmillan and Company, Limited. New York: St. Martin's Press. 10½" x 8", pp. 1034, with many illustrations. Price: £5.

The intention is to provide a text-book that takes into account the great changes which have occurred in recent years in both orientation and content of anatomical teaching.

"Dermatology", by Donald M. Pillsbury, M.A., D.Sc. (Hon.), M.D., Walter B. Shelley, M.D., Ph.D., and Albert M. Kligman, M.D., Ph.D.; 1956. Philadelphia and London: W. B. Saunders Company. Melbourne: W. Ramsay (Surgical), Limited. 10" x 6½", pp. 1331, with 564 illustrations. Price: £10.

The authors have attempted to keep in mind constantly the viewpoint of students and physicians who have had little or no experience with skin diseases and whose pre-clinical training has not included any acquaintance with the fundamental aspects of skin physiology which have useful application.

"Interesting Cases and Pathological Considerations: And a Numismatic Suggestion", by F. Parkes Weber, M.A., M.D., F.R.C.P., F.S.A.; 1956. London: H. K. Lewis and Company, Limited. 9" x 5½", pp. 81, with five illustrations. Price: 18s. 6d. Gleanings from the life of a senior practitioner.

"Diseases of the Heart and Circulation", by Paul Wood, O.B.E., M.D., F.R.C.P.; Second Edition, revised and enlarged; 1956. London: Eyre and Spottiswoode. 9½" x 6½", pp. 1043, with illustrations. Price: £5 5s.

Largely rewritten with an emphasis on recent advances.

"Roentgen Signs in Clinical Diagnosis", by Isadore Meschan, M.A., M.D., with the assistance of R. M. F. Farrar-Meschan, M.B., B.S. (Melbourne); 1956. Philadelphia and London: W. B. Saunders Company. Melbourne: W. Ramsay (Surgical), Limited. 10½" x 7", pp. 1058, with 2216 illustrations on 780 figures. Price: £10.

"This book presents the fundamentals of radiology rearranged on the basis of objective signs as seen in roentgenograms."

"Family Medical Costs and Voluntary Health Insurance: A Nationwide Survey", by Odlin W. Anderson, Ph.D., and Jacob J. Feldman; 1956. New York, London, Toronto: McGraw-Hill Book Company, Incorporated. 9½" x 6½", pp. 270, with many tables. Price: \$6.50.

Based on interviews with 2809 families (8846 individuals) representing a national sample of the population of the United States.

"Williams' Obstetrics", by Nicholson J. Eastman; Eleventh Edition; 1956. New York: Appleton-Century-Crofts, Incorporated. 10" x 6½", pp. 1222, with illustrations.

Extensively revised since publication of the previous edition six years ago, with inclusion of a new chapter on "Psychiatric Aspects of Pregnancy and Childbirth".

"Minimal Pulmonary Tuberculosis Found by Mass Radiography (Fluorography)", a report to the Proffit Committee of the Royal College of Physicians by V. H. Springett, M.D., M.R.C.P., and including results of work done by A. J. Eley, M.A., M.B., B.S., D.M.R.(D.); 1956. London: H. K. Lewis and Company, Limited. 10" x 7½", pp. 247, with illustrations. Price: £2 2s.

Based on a five-year follow up of 500 patients found by mass radiography to have small tuberculous lesions in the lung.

"Principles of Chest X-ray Diagnosis", by George Simon, M.D., F.F.R.; 1956. London: Butterworth and Company (Publishers), Limited. 11½" x 8½", pp. 194, with illustrations. Price: 65s. 6d.

The material is arranged under headings descriptive of the X-ray shadows rather than under the clinical disease labels.

## The Medical Journal of Australia

SATURDAY, DECEMBER 8, 1956.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of the article. The abbreviations used for the titles of journals are those adopted by the Quarterly Cumulative Index Medicus. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

### THE WORLD FOOD POSITION.

SINCE 1798, when Robert Malthus, in his "Essay on Principle of Populations", stated that "the power of population is infinitely greater than the power in the earth to produce subsistence for man", the possibility that the world population may grow larger than the power to produce enough food has been hotly debated. The world population has grown much more quickly than Malthus calculated, and to some extent so has the productivity of the earth. What is the present position and what that of the foreseeable future? Barnett Sure,<sup>1</sup> who has done much work on food substitutes and the food value of mixtures of foodstuffs, has reviewed the position in some detail. The population of the world has increased in the 200 years to 1950 from 728 millions to 2378 millions. The rate of increase is growing so that between 1920 and 1950 the population of the world has increased at the rate of 0.9% per year. In recent years the population of India has been expanding at the rate of 40 millions every ten years, while the food production has remained substantially unchanged. More than 90% of the population of South-East Asia is undernourished, and two-thirds of the world's population live in Asia. Similar conditions exist in South and Central America and Africa, and in all these places population is increasing more rapidly than food supply.

<sup>1</sup> Am. J. Clin. Nutrition, May-June, 1956.

A comparison of total world food production with total population can give misleading results. It has been estimated by the Food and Agricultural Organization (F.A.O.) that total world food production and total population have increased at the same rate since the beginning of the late war, but the distribution of both food increase and population increase is very uneven. Nearly half the increase in world agricultural production occurred in North America alone, and only 7% of the world population lives there. The Far East, which holds half the world's population, has maintained only its pre-war level of food production. The greatest food deficiency in the undernourished countries occurs in proteins, mineral salts and vitamins. Animal products are the best sources of these, but it takes a great deal more soil to produce a cow than to produce vegetable foods. The religious aspect is also very important in India, where the cow is sacred and is not eaten. In other parts of the East all foods of animal origin are forbidden. In general proteins of vegetable origin are much inferior to those of animal origin. In countries where vegetable proteins almost only are eaten and these often in small amounts, various types of hypoproteinoses are common. This is seen in Eastern Asia, Africa, Central America, the West Indies, parts of South America and Europe. The position is already serious, and with increasing industrialism in many of these countries there will soon arise a demand for more and better food. Can this be met? The economic aspect is an important one, for while the workers in the less developed countries work for wages which are pitifully low in relation to those in, say, North America and Australia, one cannot expect food producers in these latter countries to sell their products at prices less than the cost of production unless there are compensating factors. How can the food position be improved without too much upset? Cereals dominate the world food supply, and about 80% of the world's population eat either wheat or rice as a staple foodstuff. The daily total of Calories derived from cereals differs greatly in different countries; thus in the United States they are 34%, in the United Kingdom 35%, in Japan 37% and in southern China 75%. Cereals contain a high percentage of carbohydrates, are low in protein and have very little fat. The low content of protein is the important factor when cereals form a large percentage of the total diet, and the cereal proteins, by themselves, are deficient in essential aminoacids. Thus wheat is deficient in lysine, rice in lysine and threonine, maize in lysine, tryptophane, methionine, threonine and isoleucine. In certain parts of Asia the soy-bean largely replaces cereals or is taken with cereals. Soy-bean is high in lysine content, so that the total protein from a suitable mixture of soy-bean and wheat may equal in value proteins of animal origin. Similar results are obtained with other cereals; thus 5% of soy-bean flour added to maize meal brought about a 270-7% increase in growth. Additions of small amounts of other high value protein foods to cereals have shown marked supplementary effects. Such substances are dried milk solids with a low fat content, dried buttermilk, brewer's and cultured yeasts and peanut flour. Even the mixing of different cereals can give products with enhanced protein values. When half the proteins of milled wheat were replaced by the equivalent amount of the proteins from milled rice, there was 140% increase in growth.

Methods based on these considerations have been extensively investigated, particularly in the feeding of infants and young children. A team of workers under the direction of Professor R. A. McCance has made an intensive study in West Germany on the production and use of milk substitutes made from plant materials in the feeding of infants and young children. The mixtures were made mostly from soy-bean flour and some cereal and were eminently satisfactory for infants. This work has been reviewed in a "Current Comment" in this journal of November 28, 1953. Another method for enriching vegetable proteins, developed by Sure, is the addition of synthetic aminoacids to increase the intake of those aminoacids in low amount in the proteins. This is a very artificial way of improving proteins and at the present time expensive, but lysine-enriched wheaten bread is available on the market in the United States of America. Replacement of wheat and rice largely by soy-bean would be a useful change if the soil suitable for soy-bean culture was available. Sure points out that the proteins of rye are of much greater value than those of wheat, and rye flour is commonly used in northern European countries. An important point is that rye will grow on soil too poor for wheat. A great disadvantage of rye flour is the lack of gluten, so that bread is very heavy if it contains more than a certain amount of rye flour. Sure has recently found that the protein of buckwheat has the highest biological value of any vegetable protein, and buckwheat will grow on very poor soil where wheat and even rye will not prosper.

Leaf crops have often been considered as a source of proteins of high biological value, but the difficulties of extraction from the cellulose make it at present impracticable. Still, as a potential source of vast quantities of high-class protein green leaves must be considered.

Food yeasts have been considered as a cheap and readily produced source of protein, and large plants were in operation during the last war for their production. One hears little of them now, so that they cannot have proved acceptable. Alga, particularly chlorella, have been investigated; but so far, while it is possible to produce large crops rich in high quality proteins, the costs are too great.

Fish farming, which is practised on a large scale in south-eastern Asia, particularly in rice-growing areas, is a profitable way of producing high-class protein and could well be considerably increased. The use of the fish of the sea has yet not been exploited to any extent as a cheap source of protein. Thousands of tons of fish meal are made yearly for use for animal feeding and soil fertilizer, but little attempt has been made to introduce it as human food. If carefully prepared, it mixes well with wheat flour and makes acceptable bread. F.A.O. has been recommending the use of fish meal in Asiatic countries and has provided machinery for its production. Edible fish flour contains up to 75% to 80% of protein of high quality which may be flavourless or flavoured, depending on the fish used in its preparation. The Chilean Government is experimenting in a big way in the use of fish meal as a source of protein, and they have produced bread, cakes and other dishes made from wheaten flour with 10% of fish flour. In experiments with school children and army personnel these products have been well received. The

bread is a little darker in colour than ordinary white bread, but does not differ in taste, smell or consistency.

Oil press cakes contain much protein and could be very useful as a cheap source of protein in the oil-producing countries of Africa. F.A.O. is aiming to educate mothers to use a flour prepared from oil cakes for the feeding of children, and several factories in Belgian Congo, Nigeria and French West Africa are now processing products suitable for human consumption. The product from peanut presscake, while not as good as animal proteins, is still very useful in areas where there is chronic protein shortage, and it costs only about eight cents per kilogram. The substitutes for the present supply of proteins have been stressed because it is proteins in particular which will be short in the future when the world population is much greater. The supply of carbohydrates is not likely to run short for a long time, and not much fat is needed in the diet.

As has been mentioned, the deficiencies in protein may be insufficient total protein or protein deficient in one or more aminoacids. It was pointed out by a Nutritional Conference of the World Health Organization and the Food and Agricultural Organization held in Gambia in 1952 and quoted by P. György<sup>1</sup> that if the percentage of total Calories supplied by protein is from 10 to 15 (especially if the protein is of vegetable origin), the resistance of the organism is lowered. A ratio below 10% represents definite danger, usually with symptoms.

It will be seen that adequate protein supplies could be made available to rectify present deficiencies and to prevent deficiencies for a long time to come if some or all of the sources mentioned above could be used. A great deal of education, however, will be necessary. It is not sufficient to make the foodstuff available. One must create a demand for the food. Food habits are notoriously difficult to alter; people look askance at new foods, and the social customs of a country and often religious beliefs interfere with their acceptance.

The world is not yet short of food and will not be for a long time, but many people are and will continue to be undernourished, partly for economic reasons, partly because of personal or social peculiarities. Food surveys all over the world show that as economic conditions improve less carbohydrate is eaten and more protein, usually animal, and fat. A large intake of carbohydrate food is a danger, because insufficient protein, vitamins and mineral salts will be consumed.

## Current Comment.

### THE PREVENTION OF ACCIDENTS.

The growing complexity of life in industry, on the roads and in the home has greatly increased the accident hazard in the modern world. The deliberate cultivation by various agencies of the public conscience on matters of general health and welfare has at the same time brought the problem of accidents into prominence. The complete elimination of accidents in everyday life is probably an unattainable ideal, but the position can undoubtedly be improved. This will be aided by the pooling of experience,

<sup>1</sup> *Am. J. Clin. Nutrition*, July-August, 1954.

and this presumably was the motive which prompted the World Health Organization Regional Committee for Europe to discuss the prevention of accidents as the technical part of its business at its sixth session held in September, 1956. Figures presented from various European countries indicate the importance and magnitude of the problem. In Great Britain, 45 people on an average lose their lives every day as the result of accidents; of these 45 people, 16 meet their death in some form of travel (14 on the road, one on the railways, one in air or water transport), five at some place of work (two in factories, one in coal mines, two in farms, quarries and other places of work), and 24 in and around the home (17 inside the home, seven in ordinary pursuits around the home). Thus, contrary to a widespread impression, traffic accidents are not the most frequent cause of accidental death. This is the position also in the Netherlands, and to a lesser extent in Italy, where, of the average number of 44 people who meet their death each day from an accident, seven are killed at work, 20 in travel and 17 at home and elsewhere. In Finland in 1955, 36% of all deaths amongst people in the age group of one to fourteen years were due to accidents. About half of these deaths were due to drowning, a local phenomenon which contrasts with the position in Great Britain, where drownings are rare. In Germany, accidents in the home account for more than 30% of all fatal accidents. In Yugoslavia, among hospital patients, it has been found that almost one death in five results from an accident; the accident rate in that country has increased notably with the rapid growth in industry.

The developments that have taken place in various countries relate sometimes to largely local problems and sometimes to problems more widely shared. In Norway they have had trouble with drownings in open disused wells, and particular efforts are being made to reduce the number, including the drafting of legislation to make the owners of wells responsible. In France during the last fifteen years or so, burns and scalds have become less frequent, although it is not reported why this has been so, or why falls from windows and from high structures have become more frequent. Shared with Great Britain is a new and growing hazard in French homes from poisons. On the one hand, insecticides and corrosive liquids are kept in many homes, particularly on farms; on the other, dangerous medicines have been made much more dangerous, especially to children, by being dressed up in bright wrappings, with sugar coating on pills and so on. In Iceland, effective measures have brought about a decrease in the number of deaths due to drowning; swimming lessons are now compulsory, and by the use of the Icelandic hot springs, many bathing pools have been made in which even the smaller children are happy to test their courage and skill. In Austria, favourable results in the reduction of traffic accidents have been reported from allowing children to take part in controlling the traffic together with policemen. In that country, children are also brought into factories and to other places where danger is present. The report tells of a large block of flats in Austria where the lift is used by the children but has caused no accidents; a committee of children is responsible for keeping the lift clean and in good running order. The Austrian approach sounds a trifle heroic; but if it brings results, it may well be tried out elsewhere.

Amongst various conclusions reached at the meeting, the committee laid special stress on certain points. It is noted that information about fatal accidents is much more complete and accurate than the records of injuries which do not result in death. In general, fatal consequences are relatively frequent at the extremes of life—in children under five years, and in persons over sixty years of age. Two reasons in particular are given for the greater prominence of fatal accidents in recent years: the first is a relative increase on account of the striking fall in deaths from infectious disease ("the ebbing tide of infectious disease has uncovered accidents as a cause of sickness and death"), and the second is an absolute increase because of the new hazards associated with technical advances in ways of living and increasing mechanization. It is further pointed out that the available statistics deal almost

exclusively with fatal accidents, but it is evident that there are very many more non-fatal accidents (perhaps 100 serious or fairly serious non-fatal to each fatal accident), and those accidents must inevitably give rise to suffering, disablement and economic loss. Therefore there is an urgent need for more intensive studies of non-fatal accidents, as the evidence suggests that their pattern differs considerably from that of accidents resulting in death; for example, it is known that fatal accidents in the home tend to cluster around the extremes of life, while the non-fatal accidents affect principally the housewife in her routine work, and the older children in their many activities. As might be expected, the committee recommended that special attention should be given to preventive measures: houses and household equipment should be designed for safety, especially the electrical fittings, fires, and other sources of heat; toys should be "safe"; children and elderly people should be protected from dangerous drugs, corrosive liquids, and many other hazards. In this regard we may draw attention to the strong appeal being made at present by many doctors and pharmacists for greater care in the delivery through the post of dangerous drugs and especially of unsolicited samples. As the greatest single measure designed to prevent accidents, the World Health Organization Regional Committee for Europe laid particular stress on education. This includes the careful training of children at home and in school, especially in giving them a sense of responsibility for their own safety. It includes also the imaginative training of teachers and parents through every suitable method of publicity—film, radio, television, posters and educative booklets.

#### DIFFUSING CAPACITY AND THE ALVEOLO-CAPILLARY BLOCK SYNDROME.

JONATHAN HUTCHINSON described and defined the vital capacity over a century ago, and long before that Humphry Davy had virtually measured his functional residual capacity. It is therefore not surprising that the uptake of carbon monoxide in the lungs, one of the most recent and promising of pulmonary function tests, should have been devised nearly fifty years ago by Marie Krogh. The extremely high affinity of hemoglobin for carbon monoxide means that its transfer from the alveoli to the blood is limited, in the gas concentration used, by the permeability of the membrane separating the two, and, in so far as the whole lung is concerned, by the effective surface area available for absorption. The term "effective surface area" is deliberately chosen to indicate that carbon monoxide uptake is influenced to some extent by abnormalities of the ventilation-perfusion relationships in the alveoli. Close analysis of the factors involved in the estimation of the carbon monoxide diffusion capacity shows that the purely physiological interpretation is extremely complex (for a discussion of this aspect, see papers by R. E. Forster and his colleagues<sup>1</sup>); fortunately much of this complexity need not concern the clinician, who may accept the estimate as an empirical test of the facility with which the lungs can effect gas transfer. The breath-holding or "single breath" method of estimating carbon monoxide diffusing capacity requires a simultaneous estimate of the functional residual capacity, usually performed by a helium dilution technique, and it cannot be effectively carried out during exercise. The latter is an important disadvantage, for it is likely that the exercise value will prove to be the more significant measurement. Neither difficulty is found in the "steady-state" method, in which carbon monoxide (approximately 0.1% in air) is inhaled continuously for about five minutes. If the carbon monoxide concentration in the expired or end-tidal air is also known, the diffusing capacity can readily be estimated. Variants on this theme are described and assessed by D. V. Bates, Nancy Boucot and A. E. Dormer,<sup>2</sup>

<sup>1</sup> *J. Clin. Investigation*, 1954, 33: 1128, 1136.

<sup>2</sup> *J. Physiol.*, 1955, 129: 237.

by Bates and J. F. Pearce<sup>1</sup> and by G. F. Filley, D. J. Macintosh and G. Wright.<sup>2</sup> It may be stressed that all the procedures described are entirely free of danger and discomfort, although Filley's method involves obtaining an arterial sample for blood gas analysis (in itself a valuable although somewhat insensitive function test). The carboxyhaemoglobin concentration does not rise beyond about 10%; indeed if it did, the development of a "back-pressure" would tend to invalidate the test.

The value of assessment of diffusing capacity to the clinician lies notably in its unequivocal demonstration of the syndrome of alveolo-capillary block. Here the essential respiratory disability is an impairment of gas diffusion produced by alteration of the physical characteristics of the alveolo-capillary membrane. This may be affected in a variety of conditions, such as sarcoidosis, berylliosis, various other pulmonary fibroses, alveolar cell carcinoma and some of the collagen diseases. Nothing but estimation of diffusing capacity can achieve early diagnosis of this syndrome. Dyspnoea need not be present, but in any case it is not a helpful guide as it may be related more to changes in lung compliance, which occur in the same circumstances. In advanced cases the blood oxygen saturation falls on exercise. Recently 23 cases of this syndrome have been reviewed in detail by D. W. Cugell, A. Marks, Marjorie Ellicott, T. L. Badger and E. A. Gaensler.<sup>3</sup> The clinician will regret the omission of more detailed information on the severity of dyspnoea in each case, and of the resting arterial oxygen content, while the respiratory physiologist may consider the exercise levels attained rather too low to be ideal. These, however, are minor criticisms of a long and otherwise careful paper, the value of which is greatly enhanced by the inclusion of tests of ventilatory function and of estimation of lung volumes and mixing efficiency. In addition, oxygen consumption is related to exercise. It is perhaps because of the large amount of data presented that a few omissions are the more striking; these include resting arterial oxygen saturation, absolute rather than percentage values for ventilation tests, and the respiratory dead space estimates.

As would be expected in patients with, in effect, pulmonary fibrosis, the means for vital capacity and total lung capacity were reduced, but the mean maximum breathing capacity was within normal limits, and 75% of the vital capacity could be expired within one second. Some individual patients did show distinct ventilatory insufficiency, with maximum breathing capacities of 70% to 80% of predicted values, and one-second timed vital capacities of 55% to 70% (normal 75% to 85%) of the total vital capacity. The efficiency of gas mixing was normal. Exercise arterial oxygen tension averaged only 70 millimetres of mercury, despite the development of a high mean alveolo-arterial gradient of 37 millimetres of mercury. This reflects the high ventilation used at only mild to moderate exercise in order to achieve an alveolar oxygen partial pressure high enough to permit adequate oxygen uptake. In more than half the patients this hyperventilation led to a low arterial partial pressure of carbon dioxide, a fact which emphasizes a characteristic feature of the alveolo-capillary block syndrome: the absence of carbon dioxide retention even in extreme cases, due to the facility with which this gas diffuses across the pulmonary "membrane". The mean exercise diffusion capacity for these patients was half that of normal subjects exercising at a similar rate. More important, however, is that the decrease in diffusing capacity occurs progressively with increasing grades of disability. Furthermore, five of six patients with no disability had diffusing capacities below the normal range. These two points emphasize the value and sensitivity of the test.

Correlation was attempted with the pathological changes in 10 patients subjected to lung biopsy. As might be anticipated, this proved difficult; obviously, for example, the biopsy specimen is taken from a seriously affected area rather than a representative one. The important finding

did emerge that, although in some cases the expected abnormality of the membrane was the dominant feature, in some there were predominantly granulomatous nodules with alveolar destruction. Cugell and his colleagues postulate that the impaired diffusion is due in these instances to loss of surface area, but, as was previously pointed out, abnormal alveolar ventilation-perfusion ratios can affect carbon monoxide uptake.

The totally different pattern in the results of pulmonary function tests in emphysema is apparent. In these cases significant reduction is observed in tests of ventilatory function, such as the maximum breathing capacity and timed vital capacity; the residual volume is increased and mixing impaired. The ventilatory cost of exercise may be raised, as in the alveolo-capillary block syndrome, and either during rest or during exercise, arterial oxygen saturation may be low. On the other hand, carbon dioxide retention is relatively common, owing to inadequate alveolar ventilation. The impairment of diffusion in this disease is not due so much to change in permeability of the membrane as to abnormal ventilation-perfusion relationships in the alveoli, and perhaps also to a loss of functioning surface area. It is of interest that D. V. Bates, J. M. S. Knott and R. V. Christie,<sup>4</sup> in a paper recently reviewed in these columns, reported little diminution of diffusion capacity in uncomplicated chronic bronchitis relative to normal subjects in older age groups, although there was nearly 50% reduction in maximum breathing capacity.

The emergence of these patterns of disordered pulmonary function has greatly facilitated clinical research on a group of diseases which are notoriously difficult to assess clinically. However, for the clinician, emphasis may now be justly placed on the value of functional tests in diagnosis and prognosis in individual cases.

#### THE BONE AND JOINT DISEASE OF FOUR OF THE MEDICI.

THE very word "Medici" produces a mental impression of a family whose members were outstanding in splendour and ruthlessness, picturesque in their magnificence. Legend has it that the house of Medici was founded by Perseus, and that Benvenuto Cellini's bronze figure of Perseus holding high the head of Medusa was executed and placed in the Loggia dei Lanzi at Florence as a symbol of the victory of the Medici over the republic. The reconstruction work in Florence made necessary in 1945 by the replacement in the Chapel of the Princes and in the Church of Saint Laurence of the statues and sculptures that had been removed, made it possible to identify the remains of members of the Medici family, and Pierre Pison has given an account of the observations and deductions made.<sup>1</sup> It was possible to find traces of the injuries which brought about the death of Giuliano (1453 to 1478), brother of Lorenzo the Magnificent, who was assassinated at the time of the Pazzi plot, as well as of those inflicted on Alexander, the first Duke of Florence (1510 to 1537), who was assassinated by Lorenzaccio. A careful examination has been made by Antonio Costa, Director of the Institute of Pathological Anatomy of the University of Florence, and G. Weber, of the remains of four members of the Medici family—Cosimo the Elder, Piero the Gouty, Lorenzo the Magnificent and his third son Giuliano, Duke of Nemours. The observations made by Costa and Weber are of considerable interest, since the clinical records of the subjects show that they all suffered from disorders of bones and joints which were labelled "gout" by their contemporaries. It was the procedure at that time to class together under that name all the so-called rheumatic conditions as well as diseases of the kidneys and liver, particularly those associated with calculus formation. The clinical histories and the recent findings are of some interest.

<sup>1</sup> *J. Physiol.*, 1956, 132: 232.

<sup>2</sup> *J. Clin. Investigation*, 1954, 33: 530.

<sup>3</sup> *Am. Rev. Tuberculosis*, 1956, 74: 317.

<sup>4</sup> *Quart. J. Med.*, 1956, 25: 137.

<sup>5</sup> *Presse méd.*, September 8, 1956.

Cosimo the Elder (1389 to 1464) managed to become absolute ruler of the republic of Florence without holding any fixed office, without suppressing any previous form of government, and without departing from the appearance and demeanour of a private citizen. He was a generous patron of the arts, and he died at the age of seventy-five years whilst listening to one of Plato's dialogues. At the age of forty-three years he began to suffer from pain in the feet and ankles; this spread until his hands and knees were involved eight years later. From then until his death, roughly every two years he suffered increasingly severe exacerbations. For one month before his death he was troubled by retention of urine with some fever. The information gained by general and radiological examination of his skeleton, with histological confirmation when necessary, led Costa and Weber to conclude that Cosimo suffered from spondylo-arthritis in the clinical form localized to the vertebrae, and occurring in association with progressive rheumatoid arthritis. They state that they were unable to determine whether the condition was Marie-Strümpell disease (ascending spread) or Bechterew's disease (descending spread with cervical origin). Although it is possible, in view of the terminal prostatitis, that the infecting organism may have been the gonococcus, the view is expressed that other infective causes such as Malta fever and intestinal infection cannot be altogether rejected.

The next skeleton studied was that of Piero the Gouty, the elder of Cosimo's two sons and his successor. From the age of twenty-six years he suffered from a febrile condition, and when he reached the age of forty years, foot pain appeared. This grew worse and began to be accompanied by attacks of fever and an itchy condition of the skin. The arthritis increased in severity and extent. At the age of fifty-three years Piero died in a uræmic crisis complicated by cerebral lesions and aphasia. Radiographic examination reveals what appears to be a large phosphate and calcium calculus in the left kidney. After considering the results of all the investigations, Costa and Weber give their opinion in favour of a diagnosis of rheumatoid arthritis, which they regard as having been particularly severe because of its generalized character, the amount of ankylosis it had produced and its vertebral extension secondary to chronic polyarthritis. The initial febrile episodes they ascribe to malaria. With regard to the pruritic condition of the skin, they begin by eliminating scabies, and in the absence of any contemporary documentary evidence they consider in conjunction the dermatosis, the renal calculus, the rheumatoid arthritis of Piero and his father, and the vague renal disorder of his mother, Lucrezia Tornabuoni. This line of reasoning leads them to postulate a manifestation of the type of diffuse articular and extraarticular mesenchymatous disorder described by A. Lunedei. In the case of Piero, this would account for the terminal cerebral vascular accidents.

Lorenzo the Magnificent, eldest son of Piero, and possibly the most colourful scion of a multichromatic family, figures in this investigation only by the presence of his left humerus and his right foot; his other remains were examined earlier by Professor Genna. Lorenzo grasped the reins of State and held them firmly. He was a complete tyrant, great in his tyranny and of scandalous immorality; but Guicciardini commented that if Florence was to have a tyrant, she could never have found a better or more pleasant one. Lorenzo, like his father, suffered from a pruriginous skin condition from the age of eighteen years. After he reached thirty years, joint pains caused him to be a constant frequenter of thermal springs. At thirty-nine years he suffered from renal colic with hematuria, and the joint pains increased. At forty-three years, he died after having been ill for two months with a wasting disease, and having been afflicted with excruciating pain in the stomach and head. His physicians were at a loss to diagnose the malady, and in view of the customs of the time, poison was suspected; this suspicion has never been confirmed. Genna showed that Lorenzo suffered from chronic degenerative articular rheumatism, and that he had no gouty lesion. Costa and Weber draw attention to the relative youth of the patient,

and to the significant appearance of the left humerus. This bone in its upper epiphyseal region presents a deep curve, convex in a forward direction, associated with widening of the angle of torsion to  $39^\circ$  (normal,  $28^\circ$ ). Moreover, there is a complicated reorganization of the greater tuberosity, which is club-shaped and studded all over with osteophytes, whilst the articular surface is completely normal. Radiographic examination shows up these abnormalities, and reveals the extreme bony rarefaction in the whole of the upper epiphysis of the humerus. Costa and Weber consider these findings, and eliminate first deformation due to fracture, of which there is no historical or radiological evidence, and then deformation due to syphilis, because the condition is not dislocating and exuberant at the same time, because it is single, and because there is no trace of syphilis in the house of Medici. They then suggest that the disorder had a neurogenic basis, which in turn derived from syringomyelia (which cannot now be verified), or from a form of those hereditary diseases placed by Belloni in the category of *status dysraphicus*. This idea of an hereditary abnormality is supported by the presence of a sixth sacral vertebra in Lorenzo, in his brother Giuliano and in his great-grandson Alexander. Such an hereditary abnormality, by the diversity of its manifestations, could explain the malformation of the humerus, the anosmia which affected chiefly Lorenzo, the skin disorder and the gravel, as well as offering a means of interpreting the arthropathies, not as osteophytes but as congenital exostoses.

The final subject of the investigation was Giuliano, Duke of Nemours, the third son of Lorenzo, who was born in 1479 and died in 1516. Giuliano was always delicate; he was subject to feverish attacks from the age of nine years, and he began to suffer from severe joint pains at thirty-three years. It is considered that his death at the age of thirty-seven years was probably due to pulmonary tuberculosis. Much interest attached to his left hand, because, in his portrait painted by Allori from a sketch by Raphael, the terminal phalanx of his left index finger is seen to be missing. In his remains examined by Costa and Weber, the four metacarpals and the two phalanges found are greatly deformed; the abnormalities consist in complete ankylosis of the metacarpo-phalangeal joint of the ring finger and malformed diaphyses in the second and third metacarpal joints, with cortical thinning and denser areas in the periosteum which could have been produced by spontaneous fractures. The first phalanx of the index finger is considerably deformed, being broad and thick. There is no trace of gout or of *spina ventosa*, and the periosteal changes eliminate Perthes-Jüngling disease. There is no question of syphilis. Costa and Weber consider that Giuliano, like his father, probably suffered from an osteoarthropathy of neurogenic origin, very probably on a basis of syringomyelia. Moreover, the absence of the terminal phalanx of the left index finger could be explained as the result of analgesic panaris (Morvan's disease). History provides further support for the hypothesis in recording that Giuliano had a weak and unsteady voice. However, Costa and Weber emphasize the fact that the diagnosis of syringomyelia is an hypothesis only, acceptable but obviously not able to be proved, since the subjects have been dead for more than four centuries. Belloni's *status dysraphicus* must also be taken seriously, since, as its anatomical basis is an abnormal structure of the median line of the central nervous system, it produces various malformations of bone.

This account of Costa and Weber's findings and deductions is necessarily summarized, and reference to their original article by those interested will be well worth while. At the same time, enough detail has been given to reveal the careful observation and logical reasoning which have put their tentative diagnoses on a high level of probability. Perhaps even more important, these prominent figures of a past age appear as human beings, who were afflicted by "the ills the flesh is heir to", and did not, as one is apt carelessly to imagine, live lives of painless and disembodied greatness.

## Abstracts from Medical Literature.

### PHYSIOLOGY.

#### Counter-Current Vascular Heat Exchange in the Fins of Whales.

P. F. SCHOLANDER AND W. E. SCHEVILL (*J. Appl. Physiol.*, November, 1955) describe the vascular supply to the fins and flukes of two species of porpoises, *Lagenorhynchus acutus* and *Tursiops truncatus*. They state that all major arteries entering the fins and flukes are surrounded by a trabeculate venous channel. The arteries drain into these, but also into superficial simple veins. The artery within the venous channel is interpreted as a heat-conserving counter-current exchange system. The heat regulatory aspects of the two venous systems are discussed.

#### Propagation Through Tissues of a High Explosive Air Shock Wave.

C. J. CLEMMEDSON AND H. PETTERSSON (*Am. J. Physiol.*, January, 1956) report that anesthetized rabbits were exposed to high explosive shock waves in a detonation chamber and in a blasting range. A barium titanate crystal pressure transducer inserted into the skull, right thorax cavity, upper part of the abdomen and femoral musculature was used for the recording of the pressure pattern of the tissue-transmitted blast wave. Relatively homogeneous tissues, such as those of the brain, abdomen and thigh musculature, were found to modify the incident shock wave only little and are not significantly affected by it. The thoracic structures, especially the lungs, on the other hand, owing to their elastic and damping properties, cause a marked distortion of the incident wave. Only the main pressure peaks, but not the more rapid, smaller pressure oscillations of a complex, multi-peak shock wave, are transmitted through the lung. Generally, the peak pressure is but little changed by the passage through a tissue or organ. An exception constitutes the thorax when exposed to a short-lasting pressure peak such as that obtained in the blasting range experiments. In this case the peak pressure was considerably reduced.

#### Fatty Infiltration of Liver from Ethanol Intoxication.

S. MALLOV AND J. L. BLOCH (*Am. J. Physiol.*, January, 1956) report that acute ethanol intoxication was found to promote the fatty infiltration of liver in rats. The liver lipid concentrations gradually rose to peak values, then slowly returned to normal. The duration of the fatty infiltration and the peak liver lipid values obtained were functions of the dose of ethanol administered. Female rats showed a more severe fatty infiltration than did males, under the same conditions. The prior administration of large quantities of choline reduced the intensity of the fatty infiltration provoked by the ethanol. In contrast to intact animals, neither adrenalectomized nor hypophysectomized rats showed an

accumulation of liver lipids as a result of acute ethanol intoxication. However, adrenalectomized rats maintained on cortisone and adrenalectomized rats showed the same liver lipid response to ethanol as did intact rats. Rats chronically intoxicated for a period of thirty days exhibited hypertrophy of the adrenals. Acute intoxication produced by isopropanol administration also resulted in the accumulation of liver lipid. It is suggested that ethanol intoxication may cause the mobilization of fat from the depots to the liver, and that pituitary and adrenal cortical hormones are involved in the mechanism of this mobilization.

#### Body Type, Body Fat Content and the Metabolic Cost of Work.

A. T. MILLER AND C. S. BLYTH (*J. Appl. Physiol.*, September, 1955) report that the metabolic cost of work involving lifting the body was measured in 30 male college students during grade-running on a treadmill. The metabolic cost of work is predicted more accurately by gross body weight than by lean body mass, surface area, height, chest circumference or abdominal circumference. The prediction value of factors other than body weight is due largely to their respective correlations with body weight. Obesity limits the capacity for strenuous exertion by increasing the energy cost of exercise without a proportional increase in maximal capacity for oxygen uptake.

#### Hematocrit Ratio of Blood within Mammalian Kidney.

J. R. PAPPENHEIMER AND W. B. KINTER (*Am. J. Physiol.*, May 1956) present evidence that the dynamic hematocrit of intrarenal blood is normally about one-half that in blood entering or leaving the kidney. The hematocrit ratio of intrarenal blood, relative to that in arterial blood, varies with the corpuscular concentration in arterial blood and inversely with the renal arterial blood pressure. When the blood pressure is reduced from 140 to 50 millimetres of mercury, the vascular volume of the kidney decreases from 24% to 19% of the kidney volume, and the kidney weight decreases by a like amount (that is, 5%). Owing to the increased intrarenal hematocrit, however, the absolute quantity of red cells in kidneys removed at low pressure is usually greater than in their contralateral controls removed at high pressure. A theory is advanced to take account of the low dynamic hematocrit ratio in intrarenal blood and its variations with arterial pressure and corpuscular concentration. The theory supposes that red cells are progressively separated from plasma by a process of plasma skimming in the interlobular arteries. The deeper glomeruli are supplied primarily with plasma, leaving a highly viscous, cell-rich component of the blood to supply the terminal arterioles. After traversing the efferent arterioles, the cell-rich moiety of the blood is presumed to pass through a short circulation (preferential channels for red cells) bypassing the peritubular capillary network. The energy for the separation process is presumed to be supplied by the kinetic energy of renal arterial blood; the separation process is therefore

dependent upon velocity and cell concentration. Applications of the theory to the following topics in renal physiology are discussed: (a) the dynamic hematocrit of intrarenal blood; (b) autoregulation of the renal circulation as a function of arterial pressure and corpuscular composition; (c) afferent and efferent arteriolar resistance and the mechanism of regulation of glomerular filtration rate; (d) renal extraction of PAH and "Diodrast"; (e) oxygen supply of the kidney and its variation with blood flow.

#### Red Blood Corpuscles, Renal Blood Flow and Glomerular Filtration Rate.

W. B. KINTER AND J. R. PAPPENHEIMER (*Am. J. Physiol.*, May, 1956) report that renal blood flow was measured as a function of arterial red cell concentration in acute experiments on anesthetized cats breathing oxygen. Renal blood flow changed only slightly when the arterial red cell concentration was varied over the range 20% to 55%, despite large changes in the viscosity of blood as measured in a glass tube or in a perfused hind leg. When the red cell concentration was progressively reduced below 20%, however, the blood flow (measured at constant pressure) increased greatly, despite the fact that blood viscosity changes very little in this range of cell concentrations. Renal blood flow and glomerular filtration rate (creatinine clearance) were measured as a function of arterial pressure at normal and at very low arterial red cell concentrations. Autoregulation of both renal blood flow and filtration rate was partly or wholly abolished at low red cell concentrations. Autoregulation returned when cells were restored. The experimental results are explicable in terms of the cell-separation theory of renal hemodynamics. According to this theory the renal blood flow and glomerular filtration rate are largely controlled by the efficiency of separation of red cells from plasma in the interlobular arteries. Many observations which were previously attributed to differential changes in afferent and efferent arteriolar resistance can be equally well accounted for in terms of the cell-separation theory.

#### Carbon Dioxide Tension of Alkaline Urine.

BRUNO K. OCHWADT AND ROBERT F. PITTS (*Am. J. Physiol.*, May, 1956) report that five dogs were rendered hydropenic by the withholding of water for twenty hours and mildly alkalotic by the infusion of sodium bicarbonate intravenously in small amounts. Under these conditions alkaline urine was formed at an infusion rate of approximately one cubic centimetre per minute. In fifteen control periods the carbon dioxide tension of the urine exceeded that of the plasma; the ratio averaged  $2.08 \pm 0.44$  (standard deviation), with a range of 1.45 to 2.79. After the intravenous administration of 100 milligrammes of carbonic anhydrase as a priming dose and the infusion of the enzyme at a rate of one milligramme per minute, the ratio in 25 experimental periods decreased to an average of  $0.988 \pm 0.14$  (standard deviation), with a range of 0.78 to 1.30. The authors conclude that the high carbon dioxide

tensions commonly observed in alkaline urine result from delayed dehydration of carbonic acid to carbon dioxide in the renal tubule.

## BIOCHEMISTRY.

### Adrenaline.

S. GREEN *et alii* (*J. Biol. Chem.*, May, 1956) have shown that an iron-catalysed oxidation of adrenaline involves molecular oxygen and the production of adrenochrome. At pH 7.4 the latter compound is converted to brown melanin-like pigments. The iron-catalysed oxidation of adrenaline is increased tenfold by the presence of iron-chelating agents. The biochemically important iron-chelate ferri-tyrosine C is also more active than inorganic  $\text{Fe}^{+++}$ . In both instances hydrogen peroxide is a product of the reaction and serves to reoxidize the ferrous to the ferric chelate. Ferritin contains a small portion of its total iron in a state which catalyses the oxidation of adrenaline by a mechanism similar to that found for inorganic  $\text{Fe}^{+++}$ . Adrenochrome, which lacks the sympathomimetic activity of adrenaline, is still effective as a vasoconstrictor of the smooth muscle cells of the capillary vessels. However, the melanins, formed from adrenochrome, have no constrictor activity. These findings are utilized in an explanation of the biological activity of circulating ferritin in the inhibition of the constrictor response of the muscular capillaries to topically applied adrenaline.

### Progesterone.

W. SLAUNWHITE AND L. SAMUELS (*J. Biol. Chem.*, May, 1956) have demonstrated that incubation of isotopically labelled progesterone with homogenates or slices of testes from hypophysectomized or immature rats injected with chorionic gonadotropin led to the production of  $17\alpha$ -hydroxy-progesterone,  $\Delta^4$ -androsterone-3, 17-dione, and testosterone. Since the presence of an enzyme which would convert  $\Delta^5$ -pregnen-3 $\beta$ -ol-20-one, isolated earlier from testis tissue, to progesterone had already been demonstrated in such tissue, it is indicated that there is a sequence of reactions leading from an inactive  $\text{C}_{21}$  steroid, known to be present in testis tissue, to the known secretory products.

### Cobalamin.

J. W. DUBNOFF AND E. BARTON (*Arch. Biochem.*, May, 1956) have studied protein sulphhydryl groups in bacteria and have shown that these are decreased in number on aging, and are increased after activation with glucose-6-phosphate, glutathione and cobalamin. These changes paralleled changes in enzyme activity. It is suggested that the cobalamin activated bound sulphhydryl groups.

### Fat Digestion.

E. H. AHRENS AND B. BONGSTROM (*J. Biol. Chem.*, April, 1956) have conducted experiments in which  $1\text{-C}^{13}$  palmitic and  $1\text{-C}^{13}$ -oleic acids, dissolved in triolein and homogenized with milk

protein and sugar, have been fed by mouth to two subjects with normal gastrointestinal function. In each subject aspirations were made at two known loci in the duodenum and upper jejunum. Free fatty acids, mono-di- and triglycerides were quantitatively isolated from the intestinal contents, and the  $\text{C}^{13}$  excess of the fatty acids of each fraction was measured. Labelled acids were found in all glyceride classes in all aspirations, in di- > tri-mono-glycerides. This exchange of labelled with unlabelled acids is most likely due to synthesis of new ester bonds occurring simultaneously with hydrolysis. Evidence that transesterification also may occur is presented. However, since the breakdown of mono-glycerides is irreversible, the overall direction of the combined reactions is toward hydrolysis. Data are presented which indicate that hydrolysis proceeds at a faster rate than absorption, with the result that fatty acids accumulate in the digestion mixture, but that fatty acids are absorbed more rapidly than glycerides.

### Liver Metabolism.

C. E. WENNER AND S. WEINHOUSE (*J. Biol. Chem.*, April, 1956) have described a method for the estimation of the extent of glucose catabolism from the Embden-Meyerhof process in the liver slices. From about 50% to 100% of the acetyl groups formed from glucose were derived through that process in rat liver. The values for mouse liver were somewhat lower. Fasted, diabetic, or regenerating liver was in the normal range. Similar results were obtained in liver homogenates. Though the addition of hexokinase greatly increased glucose catabolism in homogenates, it had relatively little effect on the pattern of glucose catabolism. However, tri-phosphopyridine nucleotide greatly increased the oxidative pentose pathway in liver homogenates.

### Flame Photometry.

S. DAVID AND T. H. SIMPSON (*J. Biol. Chem.*, April, 1956) have described a flame photometric method for the determination of serum bicarbonate. A number of comparative studies, which use this method and the manometric Van Slyke technique for determinations, indicate that this method is of sufficient accuracy for clinical determination of serum bicarbonate. The series of comparison analyses indicates that the flame photometer values vary between 96.0% and 103.4% of the values obtained by the Van Slyke technique.

### Glucagon.

P. K. BONDY AND L. R. CARDILLO (*J. Clin. Investigation*, May, 1956) have studied the effects of glucagon administered intravenously to normal subjects. Acutely, it produced a rapid rise of arterial and venous blood glucose concentrations with increased arterio-venous glucose differences. No change in peripheral blood flow occurred. When given by constant intravenous infusion for two hours, glucagon caused a rise of both arterial and venous glucose concentrations with increasing arterio-venous glucose differences for about one hour; after that the arterial glucose

level fell. Towards the end of the test period hypoglycaemic symptoms often occurred. The falling glucose concentration could not be prevented by larger doses of glucagon. Over the two-hour period serum inorganic phosphate and plasma and whole blood  $\alpha$ -amino acid nitrogen concentrations fell steadily. There was no change in blood ketone body concentration. In all respects, the effects of glucagon were similar to those of doses of glucose which produced comparable arterial glucose concentration curves, and different from those of growth hormone. The authors state that these results give no support for the concept that glucagon is diabetogenic, since no evidence was obtained of reduced glucose utilization. It is more likely that in the intact organism glucagon works synergistically with insulin to release glucose from the liver, thus making it available for the peripheral utilization which is promoted by insulin.

### Cholesterol.

E. L. McCANDLESS AND D. ZILVERSMIT (*Arch. Biochem. & Biophys.*, June, 1956) have used radioactive phosphorus to study the turnover of lecithin sphingomyelin and non-choline-containing phospholipids in the aorta, plasma and liver of control and cholesterol-fed rabbits. In the cholesterol-fed animals aortic lecithin and sphingomyelin, as well as plasma cephalins, lecithin and sphingomyelin, showed highly significant increases in concentration and rate of synthesis. The fact that in the greater proportion of the cholesterol-fed animals the specific activities of individual aortic phosphatides exceeded those of the corresponding lipids in plasma is presented as further evidence that the aortic phospholipids are synthesized in the aorta itself rather than derived from the plasma by deposition.

### Progesterone.

R. WADE AND H. W. JONES (*J. Biol. Chem.*, June, 1956) have shown that progesterone accelerates the rate of hydrolysis of adenosine triphosphate in fresh rat liver mitochondria. The increase in adenosinetriphosphatase activity is proportional to the progesterone concentration between  $2 \times 10^{-5}$  and  $6 \times 10^{-4}$  M. Progesterone does not activate the release of phosphate from adenosinemenophosphate, adenosinediphosphate or glycerophosphate. Oestradiol, testosterone, pregnanediol or  $17\alpha$ -hydroxyprogesterone has no effect on mitochondrial adenosinetriphosphatase activity in this system. These four steroids and progesterone inhibit the rate of oxygen consumption, with Krebs cycle intermediates and dihydrodiphosphopyridine nucleotide as substrates. Progesterone increased the rate of dehydrogenation of dihydrodiphosphopyridine nucleotide, although it inhibits oxygen consumption with this intermediate as a substrate. Cytochrome is reduced at a slower rate in the presence of progesterone. Progesterone accelerates the rate of oxidation of ascorbic acid. Progesterone was the only steroid tested that uncouples oxidation from phosphorylation and gives a net hydrolysis of adenosinetriphosphate.

## Medical Societies.

### PÆDIATRIC SOCIETY OF VICTORIA.

A MEETING of the Pædiatric Society of Victoria was held at the Royal Children's Hospital, Melbourne, on May 9, 1956.

#### Afibrinogenæmia.

MISS B. WILSON presented the clinical notes and the results of investigations of a girl, aged eleven years, who had suffered from recurrent hæmorrhage since the age of two years. This was shown to be due to the absence of plasma fibrinogen. This case is reported in full elsewhere in this journal (see page 858).

DR. M. POWELL, in opening the discussion, congratulated the hæmatologists on the way in which they were now able to sort out patients with bleeding tendencies into an increasing number of clinical groups. He wondered whether a condition such as the one under discussion might be present as a temporary manifestation in neonates and result in a cerebral hæmorrhage.

DR. L. TAIT commented on the electrophoretic bands in the serum protein demonstrated by Miss Wilson, and said that there seemed to be differences in the albumin also, in that it was decreased in the abnormal case. He wondered, as the liver was also slightly enlarged, whether some liver function tests gave normal results.

Miss Wilson, in reply, said that those tests gave results within normal limits.

DR. J. PERRY said that afibrinogenæmia was a rare disease, and must not be diagnosed unless there was complete absence of fibrinogen.

DR. H. WILLIAMS asked was there any other treatment than blood transfusion when it became necessary.

DR. D. FRASER asked whether there was any explanation for the rapid disappearance of fibrinogen after blood transfusion.

DR. PERRY, in reply, said that as far as he knew there was no other treatment. The rapid disappearance of fibrinogen was a puzzle; one knew that fibrinolysins existed in serum, but not much was known about the factors activating them.

#### Megaureter with Reflux.

DR. R. FOWLER, JUNIOR, introduced the subject of double micturition, to emphasize its significance both as a diagnostic aid in cases of recurrent pyuria and as a method of treatment for patients with pyuria associated with urinary reflux. He defined double micturition as the ability to micturate at a second attempt two minutes after the complete emptying of the bladder at a first attempt. Further attempts at two-minute intervals might result in triple or even higher multiples of micturition and afforded a rough estimate of the volume of reflux occurring. He said that it was a very simple matter to test for that phenomenon either in the surgery or in a child's own home, and it was useful to measure and record the amounts passed at each attempt. Double micturition, when it occurred, indicated urinary reflux from the bladder into either a diverticulum or a ureter. As a clinical sign of a diverticulum it had been known for years by the French phrase of "*Pis à deux*".

The test for double micturition had another main advantage, in that it indicated whether the intravenous pyelography or micturition cystourethrography should be undertaken first in the investigation of a case of pyuria. When the result of the test was positive, micturition cystourethrography should come first for two reasons. Firstly, residual urine in the upper part of the urinary tract due to reflux could so dilute dye excreted by the kidneys that the radiographic detail might be obscured. The bladders of such children should be catheterised immediately before intravenous pyelography to drain away as much of this residual urine as possible. Alternatively, fairly concentrated dye from a well-functioning kidney on one side could produce reflux into a derelict kidney and ureter on the opposite side and give a false impression of good function on that side. Finally, Dr. Fowler reminded the audience that Dr. F. D. Stephens had previously shown that multiple micturition was a very effective form of treatment. Simply, the daily performance of triple micturition kept the majority of patients with recurrent pyuria and reflux free from infection. Inevitably some patients would not respond to that regime, and those in whom a ureteric orifice was enormous, or in whom a

diverticulum complicated a megaureter with reflux, might require surgical intervention.

Dr. Fowler then showed a patient with such a condition. The patient was a boy with a left megaureter and reflux, complicated by a diverticulum surrounding the left ureteric orifice, in whom multiple micturition, even to the extent of six to seven times, failed to remove residual urine from the urinary tract. The boy had first presented with pyuria at the age of seven years and again the following year, when a plain radiograph of his abdomen for urinary calculi gave negative findings. In November, 1955, at the age of ten years, he came again with pyuria and stranguary, having had in all 10 to 12 such attacks of dysuria during the preceding three years. He always passed such "thick" urine that his mother thought it was a purulent discharge from his urethra. Intravenous pyelography at that time produced a normal right pyelogram and ureterogram, but no dye excretion was seen from the left kidney. It was then found that he could carry out triple micturition to the extent of nine, four and two ounces in successive efforts at two-minute intervals. Diphtheroids and micrococci were grown on culture from his urine. Micturition cystourethrography was undertaken next, and Dr. Fowler presented the films of that procedure. The child's bladder had a normal capacity, and when it was filled with radio-opaque dye, no reflux was demonstrable, so that cystography alone would have been an inadequate investigation in this child. When he began to micturate, a normal bladder neck and urethra with no evidence of obstruction were outlined, and immediately gross reflux occurred up the left ureter. That reflux of dye revealed a gigantic left ureter surmounted by a grossly hydronephrotic left kidney, and at the lower end of the left ureter was a large, rounded shadow which was later discovered to be a bladder diverticulum. Later films showed that the boy emptied his bladder completely at the end of micturition, but in spite of six performances of the act, a large volume of residual dye remained in the left pelvis and ureter.

Dr. Fowler then said that the case was fairly obviously one in which multiple micturition would fail as a method of treatment, especially in view of the very poor function of the left kidney.

In December, 1955, a cystoscopic examination and retrograde pyelography confirmed that the right pelvis and ureter were normal in outline; but because of a diverticulum surrounding the left ureteric orifice, that orifice could be neither seen nor catheterized. The diverticulum was approximately ten times the diameter of a normal opening. Soon afterwards, the boy's left kidney, the whole of his left ureter and the bladder diverticulum were excised through a single long loin incision. His convalescence was uneventful; he had been examined twice since operation, and he was very well and his urine was perfectly clear. His blood urea level had been normal prior to operation, and no further tests of renal function had been made since.

In summary, Dr. Fowler said that the case illustrated the diagnostic value of the double micturition test, either as a simple office procedure or in combination with micturition cystourethrography. Although multiple micturition was a satisfactory form of therapy in the majority of cases of reflux, the case under discussion illustrated the limitations of that regime.

Dr. M. Powell said that the double micturition test had proved very useful in the investigation of recurrent pyuria in children. That was a fairly common problem, and in girls was probably an ascending infection. However, in boys one suspected some urinary tract abnormality. That office test was very useful in helping to investigate that group of patients if they had more than one attack. Dr. Powell said that if one waited longer than two minutes between attempts at micturition, other factors such as the normal secretion of urine might come into play.

#### Neonatal Meningitis.

DR. W. KITCHEN reported three fatal cases of meningitis occurring in premature newborn infants. The presence of a birth weight below five and a half pounds was accepted as adequate evidence of prematurity.

Discussing the hazards presented to the newborn premature baby, Dr. Kitchen quoted an extensive autopsy survey conducted by Edith Potter, in which death was attributed to sepsis in 39% of deaths in the neonatal period of premature infants. It followed naturally in the evolution of the care of the premature neonate that, as sulphonamides, penicillin and streptomycin became available, they should be applied first to treatment, then to prevention of the infec-

tions in the critical first few days of life. In Melbourne the currently accepted routine was the use of a procaine penicillin preparation, 100,000 units, and streptomycin, 20 milligrammes per pound of body weight, each given once a day for the first five consecutive days of life. In some centres administration of antibiotics was not a routine procedure, but they were given to a very small baby, or if the membranes had ruptured more than seventy-two hours before delivery. In most cases, one was inclined to accept without question the efficacy of prophylaxis; yet the occurrence of "sticky eyes", pustules and paronychia during chemotherapy was quite frequent, but severe cases of generalized infection occurring under similar circumstances were far less commonly encountered. That justified the presentation of two cases of meningitis, which occurred whilst the baby was having prophylactic chemotherapy.

Dr. Kitchen went on to say that interest in the subject had been first aroused when the baby in Case I was examined in a nearby country hospital. No prophylactic chemotherapy had been given. The baby was a female, of thirty-five weeks' gestation, and weighing four pounds eleven ounces at birth, the first offspring of a mildly toxæmic mother who had spent one week in bed prior to the spontaneous onset of labour. Labour had lasted eleven hours, and was completely normal; the membranes had ruptured three hours before delivery. The infant revived promptly, and at twelve hours feedings were commenced with diluted breast milk. No paediatric consultation was adjudged necessary until, at the age of three days, the infant vomited, and in rapid sequence developed cyanosis only partially ameliorated by oxygen, twitching of the angles of the mouth, generalized convulsions and semi-coma. On examination at that stage, the baby was semi-comatose and moribund. Peripheral circulatory failure was profound; the heart sounds were feeble and the rate was in excess of 200 per minute. There was no petechial or pustular skin rash, nor evidence of umbilical or other sepsis. As far as could be ascertained clinically, the chest was free of abnormality, although prolonged periods of apnoea made auscultation difficult. A bulging fontanelle was noted, a lumbar puncture was performed, and the patient died soon after. The fluid obtained was opalescent and mildly xanthochromic. Further examination revealed occasional polymorphonuclear leucocytes and numerous organisms identified culturally as *Neisseria meningitidis*. No further cases occurred in the nursery, and the organism was absent from throat and nasal swabs of suspect members of the nursery and medical staff.

Dr. Kitchen said that he considered the case to be one of meningococcal meningitis arising as septicaemia, in which it was reasonable to believe that if penicillin had been given prophylactically, it would have prevented or modified infection. Soon afterwards he had examined a baby in whom septicaemia and meningitis appeared during prophylactic chemotherapy (Case II).

The patient was a full-term male infant weighing just five pounds at birth. The parents were relatively young Maltese, resident in Australia for two years. The mother's health and diet during pregnancy were good. Labour was normal in every way, the membranes rupturing shortly before delivery. The baby was treated as a premature one and kept in the nursery. The nursery sister, with apparent clairvoyance, administered 100,000 units of "Cilicaine Suspension" and 100 milligrammes of streptomycin daily, commencing their administration at the ninth hour after delivery. Under her guidance feedings were commenced with 5% glucose solution in water after twenty-four hours, and they were taken satisfactorily by bottle. However, at thirty-six hours a feed was refused, and soon afterwards the baby's skin became mottled and cold. On examination of the infant the temperature was subnormal, and the skin showed signs of peripheral failure with sluggish capillary return. There was no clinical evidence of infection in the skin, umbilicus, chest, ears or throat, and a later microscopic examination of urine gave normal results. The fontanelle was rather full, so that after preliminary resuscitation with serum given intravenously, lumbar puncture was performed, and clear, faintly xanthochromic fluid was obtained. Freshly prepared crystalline penicillin, 10,000 units, and streptomycin, 25 milligrammes, were given intrathecally. Microscopic examination of the fluid revealed 132 polymorphonuclear leucocytes and two lymphocytes per cubic millilitre, and a protein content of 60 milligrammes per 100 millilitres; but the fluid was sterile, and no organisms were found in a smear. Those features were puzzling at the time, but were thought to represent early invasion of the meninges by an infection which was part of an overwhelming septicaemia. As the predominant organism causing infection in that particular nursery was a *Staphylococcus aureus* known to be sensitive

to the tetracycline group of antibiotics, tetracycline, 100 milligrammes per day, was given intravenously. Within thirty-six hours the improvement was highly satisfactory, so that fluid and antibiotic were tolerated by mouth and recovery seemed likely. The fontanelle remained normal in tension, and lumbar puncture was therefore not repeated. On the fifth day there was a slow deterioration, and a respiratory type of death occurred within fifteen hours, with chest retraction and cyanosis, and numerous bilateral crepitations were felt in the lungs and blood-stained fluid was present in the mouth shortly before death.

Dr. A. Williams performed the autopsy. The positive findings were confined to the brain and lungs. In the pulmonary system the macroscopic findings were those of gross pulmonary haemorrhage with blood-stained fluid in the trachea and very little residual functional lung tissue. Microscopic examination of sections confirmed those findings. In the nervous system there were a few small collections of yellow pus over the surface of the cerebellum and brain stem, with roughening and reddening of the lining of the fourth and lateral ventricles. The cerebral hemispheres were free of gross infection. A *Staph. aureus*, sensitive only to erythromycin, was obtained on post-mortem culture.

Dr. Kitchen summarized the case as presenting the features of staphylococcal bacteraemia and later meningitis developing during so-called adequate prophylactic antibiotic therapy. The infection later was clinically controlled with tetracycline, but the baby subsequently died of diffuse pulmonary haemorrhage of uncertain cause.

Dr. Kitchen's third case was that of a female baby, the second child of an Rh-negative mother. The child was born after a thirty-three weeks' gestation, and weighed three pounds twelve ounces. No reason was apparent in the mother's past history or subsequent behaviour for the onset of the premature labour, which lasted three and a half hours and was uneventful. The patient was first examined as a routine measure at the age of four hours, and she was unusually vigorous and active, with no detectable clinical abnormality. The placenta had been saved for inspection, and although it was small, it was normal on macroscopic examination. "Cilicaine Suspension", 10,000 units, and streptomycin, 100 milligrammes, were given daily, as well as one injection only of five milligrammes of "Synkavit". Jaundice appeared at eighteen hours, but in the presence of a negative response to the direct Coombs test and a haemoglobin value of 21 grammes per centum, was thought to be physiological in nature. Feedings were given at twenty-four hours, initially 5% glucose in water by bottle, later appropriately diluted, pooled breast milk. Quite suddenly, on the third day, repeated generalized convulsions occurred, and when these were controlled with four millilitres of paraldehyde given by intramuscular injection, the fontanelle was found to be tense. There was no evidence of infection or abnormality elsewhere. Lumbar puncture yielded xanthochromic opalescent fluid, in which the clinical pathologist reported the presence of occasional polymorphonuclear cells and a gross infestation with a Gram-positive pleomorphic bacillus identified on culture as *Bacterium coli*. The organism was sensitive only to streptomycin in high concentration. Death followed three hours after the onset of convulsions. An autopsy was refused.

Dr. Kitchen summarized the case as one of *Bact. coli* meningitis developing whilst the baby was being given streptomycin, a drug to which the organism was partially sensitive.

Dr. Kitchen commented that the last two cases posed a number of problems which had not been answered in any of the large published series on the cause of death in the premature infant, for such articles failed to disclose whether antibiotics were used prophylactically or at what stage in life their administration was commenced. The high incidence of cutaneous cross-infection and the occasional severe fatal infections such as those he had described showed a serious defect in the results of antibiotic "cover" used. Whether that defect was sufficient to demand abandonment of penicillin and streptomycin in favour of one of the broad-spectrum antibiotics, or whether the dosage scale of the current antibiotics should be revised, could not be decided on the evidence at present available. Dr. Kitchen suggested that one conclusion was certain: scrupulous attention to asepsis and elaborate precautions to avoid cross-infection in the nursery could not be relaxed, and certainly could not be replaced by a few injections of antibiotics.

Dr. KATE CAMPBELL said that she thought the important thing was the maintenance of a good standard of nursing hygiene and nursing, rather than the exhibition of heavier prophylactic doses of antibiotics.

Dr. R. SOUTHEY asked whether it was thought possible that any of the infections had occurred before birth.

Dr. Kitchen, in reply, said that there was no infection in the mothers to support that suggestion.

Dr. S. WILLIAMS said that antibiotics and small feedings had enormously improved the prospects of survival in premature babies. He thought that prophylactic measures had done some good; but when the staphylococcus was known to be present, and perhaps conditions were not ideal, then broad-spectrum antibiotics, even erythromycin, should be used.

#### Chronic Intestinal Obstruction due to a Neoplasm of the Small Bowel.

Dr. J. COURT presented the clinical details of a female child, aged four and a half years, who had been born in Greece. He said that she had had an uneventful and healthy infancy, and her only illness before leaving Greece at the age of three years had been a severe attack of pertussis. At the time of the family's migration to Australia, she seemed to her mother to be a normal, healthy child. One week after her arrival in Australia the child had an attack of vomiting, requiring her admission to the migrant camp hospital for two days. Within a month she had had a further attack of vomiting with abdominal pain. Towards the end of the attack she was examined at the Royal Children's Hospital, and was afebrile, showed no abnormal physical signs and settled down rapidly in one day. She remained well for the next twelve months; but at the age of four years the attacks of abdominal pain and vomiting recurred and became steadily more severe and frequent, to the extent that she rarely had more than one or two days' freedom from them. The attacks usually commenced at night, and only rarely during the day. The onset of pain was rapid, and the pain was situated in the lower part of the mid-line. The spasms lasted ten to thirty minutes at a time and appeared to be very severe and colicky, in that the child rolled about in her bed. The vomiting was forceful, and the vomitus was watery and offensive, and was only once noted to contain bile, never solid material or blood. The child was not feverish at any stage, and her stools were passed regularly and were normal in appearance and consistency.

During the four months' period before her admission to the hospital she had become rather listless and had lost her interest in play. She gradually lost her appetite, and had taken nothing but milk for the last three weeks and was losing weight. The family, which included two older children, lived in very poor conditions in one small, damp room. They had previously lived in three other places, each worse than the present one, as well as for two weeks in a migrant camp. In addition, the mother was five months pregnant. Both parents worked, and the child was left alone for two hours each day when their shifts coincided. The child was admitted to hospital during an attack, which had lasted one day and was then subsiding.

On examination of the patient, she appeared pale, quiet and not distressed. Her temperature was 99.4° F., and her pulse rate 100 per minute. There were no abnormal physical signs, the abdomen was lax, not distended or tender, and there were no palpable masses other than faecal. The urine gave a strongly positive result to the test for acetone, but was otherwise chemically and microscopically normal. Investigations revealed moderate hypochromic anaemia with a haemoglobin value of 60% and a normal white-cell picture. The chest X-ray appearances were within normal limits, and the response to the Mantoux test was negative.

After a week in hospital she had had no attacks of pain or vomiting, and at that stage consideration was given to the question whether her symptoms could be explained psychologically on the basis of her very poor home circumstances and her unsettled life. However, during the following week she had three attacks of abdominal pain, during which her abdomen was distended, and gross peristalsis with a ladder pattern was seen. X-ray examination on one of those occasions revealed numerous fluid levels in the small bowel. The vomitus was clear, bile-stained and copious during the first attack; but she vomited only once during the second, after which she rapidly improved and became her normal, happy self within an hour. She did not vomit at all during the third attack. None of the attacks lasted more than two to three hours, and between attacks she was bright and happy, free of symptoms and signs. However, there seemed no longer any doubt that a mechanical obstruction of the small bowel was present. A barium meal X-ray examination was carried out, but revealed no abnormality.

Dr. Douglas Stephens performed a laparotomy on April 5, 1956, and found a mass situated at the junction of the ileum and the jejunum. The mass was elongated and rubbery, and replaced the wall of the bowel for approximately four inches. The thickness of the wall encroached on the lumen. The mass was clearly demarcated from bowel above and below. The bowel was somewhat hypertrophied and dilated above and collapsed below the mass. There was generalized mesenteric lymph-gland enlargement, and the glands regional to the mass did not differ from those elsewhere except for one larger one, which was excised. After resection of the mass, with four inches of bowel on either side, a side-to-side anastomosis was performed. Her post-operative course was uneventful, and recovery was remarkably rapid. A radiological survey of the skeleton carried out at that stage revealed no bony metastases, and she was discharged home when her wound had healed. One month after operation, the child was extremely well, had had no symptoms, was eating well and had gained four pounds in weight.

In summarizing, Dr. Court said that the case was that of a child, aged four years, who had recurrent attacks of abdominal pain with vomiting over a period of sixteen months, the attacks becoming progressively worse and more frequent. The patient showed, during an attack, clinical and radiological evidence of acute bowel obstruction, but no evidence between attacks, and at operation was found to have an ileal mass largely obstructing the bowel. The patient showed some unusual features. Firstly, when she was examined only between the attacks, with no clinical evidence and much social evidence, her symptoms might easily have been thought to be psychological. Secondly, there was a complete absence of any signs between attacks, despite the high degree of partial obstruction of the small bowel lumen.

Dr. A. WILLIAMS then discussed the morbid pathology of the tumour. He said that when the resected portion of bowel was opened, a neoplasm was seen to be present in the wall of the gut. The total length of bowel resected was 12 inches, and the central four inches of it were occupied by tumour tissue. Proximal to the tumour the jejunum was dilated, and the obvious muscular hypertrophy was consistent with the duration of symptoms. The tumour had caused a diffuse thickening of the bowel wall, appearing macroscopically to have infiltrated all coats of the gut in that segment. The thickness of tumour tissue varied between one-quarter and three-eighths of an inch. The major portion of the surface of the tumour appeared to have ulcerated. At the site of the tumour dilatation of the bowel lumen rather than constriction was present, except for one area where constriction of the lumen was apparent.

Histological examination of preparations revealed that the tumour consisted of a uniform sheet of cells which infiltrated the mucosa and extended out to infiltrate and destroy the muscular coats. The peritoneal surface appeared to be intact. No cellular pattern was apparent, and the more common tumours of the small intestine—namely, argentaffin-carcinoma and adenocarcinoma—could be dismissed by the differential diagnosis. The tumour was composed of large cells with large hyperchromatic nuclei, and a small amount of cytoplasm of irregular outline. Occasional larger cells with more than one nucleus were present, and a few mitotic figures were found in all sections examined. No evidence of cellular differentiation was present, and Dr. Williams said that he regarded it as a sarcoma arising from lymphoid tissue within the bowel wall. Production of reticulum had not occurred; neither had maturation to lymphocytes. No metastatic tissue could be found in the enlarged lymph nodes in the mesentery, the enlargement being due to subacute inflammation. Dr. Williams went on to say that sarcomata arising from the lymphoid tissue of the bowel were uncommon, although well-documented cases were present in the literature. Two had been recorded by Dr. R. Webster in his "Pathological Reports from the Children's Hospital, Melbourne". Those two tumours occurred in the caecum, and the appearance of one was that of a well-differentiated lymphosarcoma, the majority of cells being small, dark, round cells. The tumour in the second case was not so well differentiated, although sufficient lymphocytes were present to enable a conclusive histological diagnosis to be made. Dr. Williams had seen only one similar case, and also a lymphosarcoma of the caecum in a child, aged three years. Differentiation was much better than in the tumour under discussion.

Dr. D. SCHLICHT asked whether radiotherapy had any place in the treatment of the child under discussion, and what was considered the prognosis.

Dr. Court said that Dr. R. Kaye Scott had been consulted about the use of radiotherapy. His opinion was that, while

It was thought that the entire tumour had been removed and there was no evidence of metastases, the risk that radiotherapy might affect the growth centres was probably greater than the risk of spread. It was better to watch, and use that form of treatment if local recurrence became evident.

Dr. D. Stephens said that one of the patients mentioned by Dr. Webster had presented to Dr. J. G. Whitaker with recurrent intussusception.

Dr. H. Williams asked what was known of the follow-up findings in the three other cases mentioned.

Dr. A. Williams said that the patients in the two cases recorded by Dr. Webster had died. There was no follow-up examination of the third.

Dr. W. RICKARDS said that emphasis had been placed on the social condition of the family when the diagnosis was being considered in the initial stages of the case under discussion. He said that it was not the social conditions but the child's reaction to them that was important, and usually one could see what that might be by studying the child's personality. Evidence of a personality that might react unfavourably did not seem to have been noted in the present case, and without that one would not care to attribute the physical symptoms to adverse social conditions.

## Out of the Past.

*In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.*

### THE NEW SOUTH WALES MEDICAL GAZETTE.<sup>1</sup>

[From the *New South Wales Medical Gazette*, October, 1871.]

At the commencement of this, the second year of the existence of the Gazette we beg to inform subscribers that our Journal is no longer owned by the Medical Officers of the Volunteer Force, but will be, for the future, carried on by one (a) of the Editors of the first Volume who is the sole proprietor.

We have to thank those gentlemen who have so kindly assisted us by contributing papers and cases and to acknowledge the courtesy received from both the Metropolitan and Country press and hope the efforts we have made to render our Publication of a high character in both a professional and scientific point of view have met the approbation of our Subscribers.

Our young Journal having now passed through the period most fatal to infants, having required great care and nursing to arrive at its present age, hopes that it will still receive an increased support of Dr. Frederick Milford of the profession so that its vitality may remain intact and a healthy youth may only be the precursor of a vigorous adolescence.

In September of last year a circular was sent to all the Hospitals and Benevolent Asylums throughout the Colony, informing the medical gentlemen connected with them that the Gazette would be happy to publish cases of interest and operations performed in these various institutions: we are sorry to say that this invitation has been met very coldly, and that very few cases connected with hospitals have appeared in the first volume. We take the opportunity of again reminding Subscribers that the Gazette is the organ of the Profession, and that each member of it should strive to increase the value of the paper by contributing such cases of interest as will be of use, not only for supporting the Journal, but in more distinctly fixing the characteristics of the diseases of New South Wales and their treatment. In a pecuniary point of view we have been the losers, but we are happy to say not to any great amount, and the Proprietor hopes that next year by decreasing the expenses as much as possible without curtailing the usefulness of the paper, that it will prove a commercial success. The Proprietor furthermore begs to inform subscribers that he will use his utmost efforts to maintain the high tone and scientific value of the paper.

[The first issue of the *New South Wales Medical Gazette* appeared in October, 1870: publication ceased in November, 1875.]

<sup>1</sup> From the original in the Mitchell Library, Sydney.

## Correspondence.

### EPILATION FORCEPS.

SIR: I have found the usual types of cilia forceps for epilation of eyelashes disappointing. I have now a pair of forceps used by watchmakers to hold second hands, which

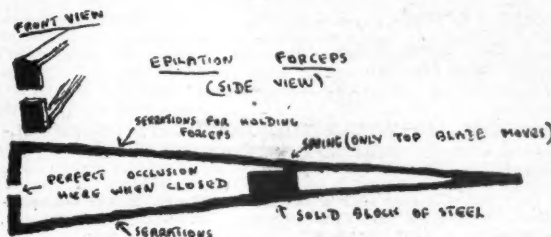


FIGURE I.

has never failed me. I think other practitioners might find them equally useful. They can be obtained from any firm which stocks watchmakers' requisites.

Yours, etc.,

105 St. George's Terrace,  
Perth,  
October 4, 1956.

F. W. SIMPSON.

### PHARMACEUTICAL BENEFITS AND THE TREATMENT OF LEUCHEMIA.

SIR: With regard to my letter on including cortisone, 6-mercaptopurine and "Myleran" in the pharmaceutical benefits list (M. J. AUSTRALIA, November 17, 1956). In amendments to "Notes for Medical Practitioners", No. 4 (1956-1957 edition) (effective from November 1, 1956), mercaptopurine and "Myleran" are included in the second schedule. However, cortisone acetate, prednisolone and prednisone are only available for two blood diseases, namely, acquired haemolytic anaemia and thrombocytopenic purpura. I would urge that leukaemia be included in the list of diseases eligible for treatment with cortisone, which is not only effective in producing remission, but is less toxic than either mercaptopurine or "Myleran".

Yours, etc.,

417 St. Kilda Road,  
Melbourne, S.C.2,  
November 1, 1956.

JOHN A. McLEAN.

### NOMENCLATURE AND DRUGS OF THE CORTISONE GROUP.

SIR: I have noted the plea by Dr. R. Munro Ford for the labelling of drugs of the cortisone group with basic names. In Britain the *Therapeutic Substances Act* requires all drugs controlled by the act to be labelled with the British Pharmacopoeia, British Pharmaceutical Codex or accepted scientific name in letters at least as large as any trade name. I feel that it would not be unreasonable to make such a ruling universal for all drugs subject to poisons regulations.

Yours, etc.,

November 16, 1956.

PHARMACIST.

### WARTS, PLANTAR AND VULGAR.

SIR: A large wart developed on my finger, caused, I think, by infection of a scratch during curettage of a plantar wart. Over many months it resisted treatment, including two half-hearted curettages. While I was applying "Granelidin" to an *otitis externa* the wart broke up and completely disappeared in a couple of weeks.

During the past six months Guyon and I have tried "Graneodin" in people with warts with some dramatic successes. Any attempt at assessing percentages is difficult, since so many patients never return to report successes, but we have enough evidence to justify dissemination of the observation to our colleagues for further assessment. Is it the neomycin, the gramicidin or both? What other antibiotics are effective? I hope my dermatological colleagues will not refer to grandmothers and eggs! I have not read any reports of similar treatment.

Yours, etc.,

Burrows Street,  
Young,  
New South Wales.  
November 16, 1956.

MAURICE PURCHAS.

#### FACTORS AFFECTING THE MORTALITY OF SMALL-BOWEL OBSTRUCTION.

SIR: Mr. Charles Gale's article on "Small Bowel Obstruction", published in *THE MEDICAL JOURNAL OF AUSTRALIA*, November 3, 1956, page 669, is worthy of comment.

I agree with him that distribution of the responsibility in these cases is undesirable. The surgeon should be able personally to handle the problems of electrolyte imbalance, intubation and operation.

Certain of his indications for intestinal intubation are debatable. Mechanical intestinal obstruction in the early post-operative period (that is, excluding paralytic ileus) is not safely treated by intubation as a definitive measure. This has been shown by a series of such cases occurring in the Brisbane Hospital (Davis, 1956, *Australian & New Zealand J. Surg.*, 25: 161). Once the diagnosis is made, early operation is necessary.

The signs of strangulation as stated by Mr. Gale do not always occur, although regularly stated in text-books. The institution of intestinal suction and intravenous therapy will often produce a remission of these classical signs, in much the same way as morphine masks the signs of an acute abdomen. Perhaps two of the most important signs upon which to consider operation are a persistent tachycardia and persistent feculent aspirations. These will usually be present in a closed loop obstruction.

I was biased in favour of intestinal intubation when I was appointed to the Brisbane Hospital four and a half years ago, but experience since then in a hospital with over 300 general surgical beds has convinced me that it has only a limited place. It is particularly useful, as Mr. Gale states, in recurrent incomplete obstruction due to old adhesions, and in certain cases of peritonitis.

Yours, etc.,

121 Wickham Terrace,  
Brisbane,  
November 5, 1956.

NEVILLE DAVIS.

#### UNSOLICITED SAMPLES FROM DRUG HOUSES.

SIR: Today I received by post my weekly, unwanted sample of amphetamine sulphate in an unsealed envelope. As I have three small children, who often bring in the letters, I find the receipt of these samples both exasperating and alarming. Could the British Medical Association bring pressure to bear on the drug houses to stop this dangerous and unendeavouring custom? Perhaps the manufacturers think that by such persistence it will eventually drive doctors to consume these samples to offset the psychic trauma thereby engendered.

Yours, etc.,

89 Fitzwilliam Street,  
Kew,  
Victoria.  
November 2, 1956.

GWEN FONG.

#### ELECTROCONVULSIVE THERAPY AND TRANQUILLIZING DRUGS.

SIR: We have noted that after a fit produced electrically—electroconvulsive therapy—the patient is either spastic or flaccid temporarily. If he has not been given one of the

tranquillizing drugs, there is spasticity; if he has been given one of these drugs, there is marked flaccidity. In the latter case, the return of respiration is delayed. In either case, it is our routine practice to perform the movements of artificial respiration as a help to the patient.

As a result of our observations we presume that the flaccidity which occurs following the fit, if a tranquillizing drug has been used, must be due either to the action of the drug on the extrapyramidal tract, or on the autonomic nervous system. It is understood that the tranquillizing drugs act on the rhinencephalon, as evidenced by electroencephalographic records from this area in cases where the electrode has been introduced into this region.

Our observations may serve to throw some light on problems associated with spasticity and flaccidity.

Yours, etc.,

Lachlan Park Hospital,  
New Norfolk,  
Tasmania.  
November 5, 1956.

S. J. CANTOR,  
N. R. PATERSON.

#### Obituary.

SYDNEY DEVENISH RHIND.

DR. SYDNEY DEVENISH RHIND, a former editor of the *New Zealand Medical Journal*, died in Wellington, New Zealand, on September 1, 1956, at the age of sixty-two years. A New Zealander by birth, Dr. Rhind received his school and undergraduate medical education in England. He served in France with the New Zealand Medical Corps during the 1914-1918 war, and was awarded the Military Cross. After the war he became a Fellow of the Royal College of Surgeons, England, and from 1924 till shortly before his death he carried on a surgical practice in Wellington, New Zealand. He was an active member of the honorary staff of the Wellington Hospital from 1924 to 1953, when he retired to the consultant staff. He played a leading part in the affairs of the British Medical Association over a long period and gave distinguished service, which was much appreciated by his medical colleagues. He was Honorary General Secretary of the Branch from 1940 to 1943, and President in 1945. After some years as assistant editor of the *New Zealand Medical Journal*, he held the position of editor from 1933 to 1939. By both his personal and his professional qualities Dr. Rhind evoked respect and affection, and he has left a deep mark on medicine in New Zealand.

#### HENRY WILLIAM SPALDING LAURIE.

DR. H. KEITH PAVY has sent the following appreciation of the late Dr. Henry William Spalding Laurie.

Henry William Spalding Laurie, known affectionately as "Bill", graduated at the University of Melbourne in 1933. For the next three years he was attached to the Alfred Hospital, first as house surgeon and during his last year as resident pathologist. From the Alfred Hospital he joined a medical partnership at Naracoorte and immediately endeared himself to a large circle of patients and friends because of his obvious sincerity and his devotion to his work.

His was a very clear and logical mind, inherited no doubt from a line of professional and university men and women. His method of working was to seek the basic facts and to give the necessary relief and comfort as soon as possible, irrespective of time and his own personal feelings. He was a family physician in the truest sense, beloved by young and old.

During the war years he quietly assumed the responsibility of virtually the whole practice in the absence for over three years of his two partners. In the years following the war, owing to the rapid expansion of the town and district, the volume of work became even greater. Despite all this, Bill found time to take his part in township activities as a loyal citizen should do.

Among his activities were the Library Committee, the Corporation and the Golf Club, and many other functions and societies received the benefit of his sound advice and reasoning. The first indication of trouble was at Christmas

time, 1952, when he had some paresis and it was found that he had a very high blood pressure. With great difficulty he was persuaded to rest, and finally he retired from his partnership in 1954. Treatment was of no avail, and his condition degenerated slowly until his death on August 31, 1956, at Caulfield, Victoria.

The Mayor of Naracoorte, Mr. E. W. Worthley, at a subsequent Corporation meeting, said:

It was my privilege to have known him as a doctor and as a man in the truest sense of the word. We have lasting impressions of Dr. Laurie—a man who served his profession with great distinction. He was the true family doctor; he shared the joys and sorrows of his patients; his courage, sincerity and immense capacity for service endeared him to all.

The call of duty was ever dominant in his thoughts and actions, and his life was devoted to alleviating suffering and pain. His self-sacrifice knew no limits, and in addition to his profession which made continuing call on his time and energy, he found time to act as Health Officer and, for some years, as Corporation Councillor. He firmly believed that citizens had responsibilities to the community, and his considered opinions in Council were always respected. Our deepest sympathy is extended to his wife and young family.

## Medical Practice.

### POLICE OFFENCES (AMENDMENT) ACT, 1908, AS AMENDED, OF NEW SOUTH WALES.

THE following memorandum is published at the request of the Under Secretary, Chief Secretary's Department of New South Wales.

By Proclamations published in the *Government Gazette* of April 24, 1952, and June 5, 1953, respectively, Part VI of the *Police Offences (Amendment) Act* was applied to the undermentioned drugs:

Dromoran (also known as Methorphan) (3-hydroxy-N-methyl Morphinan), its salts and any preparation, admixture, extract or other substance containing not less than one-fifth per centum of Dromoran.

Methorphan (3-Methoxy-N-Methylmorphinan), its salts and any preparation, admixture, extract or other substance containing not less than one-fifth per centum of Methorphan.

Recently, it came under notice that each of these compounds could be obtained in three isomeric forms, the dextro-, levo-, and racemic forms. From inquiries made it has been established that in both compounds it is the levo and racemic forms that are addiction drugs and that in both compounds the dextro form has exhibited no addiction liability. It has, therefore, been decided to lift control under the Police Offences (Amendment) Act so far as the dextro isomers are concerned.

It will be seen from the attached copy of a Proclamation<sup>1</sup> that the previous proclamations relating to Dromoran and Methorphan are being repealed and that Part VI of the Act is to be applied to Levorphan, Racemorphan, Levomethorphan and Racemethorphan.

### PROCLAMATION.

J. Northcott,  
Governor.

I, Sir John Northcott, Knight Commander of the Most Distinguished Order of Saint Michael and Saint George, Knight Commander of the Royal Victorian Order, Companion of the Most Honorable Order of the Bath, Lieutenant-General on the Retired List of the Australian Military Forces, Governor of the State of New South Wales and its Dependencies in the Commonwealth of Australia, with the advice of the Executive Council, do, by this my Proclamation, declare that Part VI of the Police Offences (Amendment) Act, 1908, as amended, shall apply to

Levorphan, (-)-3-hydroxy-N-methylmorphinan (also known as Dromoran), its salts and any preparation, ad-

<sup>1</sup> This Proclamation was published in the issue of the *New South Wales Government Gazette* of Friday, November 30, 1956.

### DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED NOVEMBER 17, 1956.<sup>1</sup>

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism .. ..	2(1)	..	3(1)	..	..	..	..	..	5
Amoebiasis .. ..	..	..	..	..	..	..	..	..	..
Ancylostomiasis .. ..	..	1(1)	..	..	..	..	..	..	1
Anthrax .. ..	..	..	..	..	..	..	..	..	..
Bilharziasis .. ..	..	1(1)	..	..	..	..	..	..	1
Brucellosis .. ..	..	..	..	..	..	..	..	..	..
Cholera .. ..	..	1(1)	..	..	..	..	..	..	1
Chorea (St. Vitus) .. ..	..	..	..	..	..	..	..	..	..
Dengue .. ..	..	..	..	..	..	..	..	..	..
Diarrhoea (Infantile) .. ..	3(2)	10(8)	1	..	2(2)	..	1	1	16
Diphtheria .. ..	..	9(9)	92(1)	3(2)	3(3)	..	..	..	106
Dysentery (Bacillary) .. ..	..	3(3)	..	..	..	..	..	..	3
Encephalitis .. ..	..	..	..	..	..	..	..	..	..
Filariasis .. ..	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice .. ..	..	..	..	..	..	..	..	..	..
Hydatid .. ..	..	..	..	..	..	..	..	..	..
Infective Hepatitis .. ..	78(23)	28(13)	..	15(6)	2	4(1)	2	1	130
Lead Poisoning .. ..	..	..	..	..	..	..	..	..	..
Leprosy .. ..	..	..	..	..	4	..	..	..	7
Leptospirosis .. ..	..	..	..	..	..	..	..	..	..
Malaria .. ..	..	..	1(1)	..	..	..	..	..	1
Meningococcal Infection .. ..	1	3(2)	..	1	..	2	..	..	7
Ophthalmia .. ..	..	..	..	..	..	..	..	..	..
Ornithosis .. ..	..	..	..	..	..	..	..	..	..
Paratyphoid .. ..	..	..	..	..	..	..	..	..	..
Plague .. ..	..	..	..	..	..	..	..	..	..
Poliomyelitis .. ..	1(1)	3(2)	..	1(1)	..	..	..	..	5
Purpural Fever .. ..	1	..	..	..	..	..	..	..	1
Rubella .. ..	..	54(35)	3(3)	38(17)	3(3)	..	1	..	99
Salmonella Infection .. ..	..	..	..	1(1)	1(1)	..	..	..	2
Scarlet Fever .. ..	9(5)	8(6)	3(1)	7(2)	1(1)	2	..	..	30
Smallpox .. ..	..	..	..	..	..	..	..	..	..
Tetanus .. ..	..	..	1(1)	..	..	..	..	..	1
Trachoma .. ..	..	..	..	..	8	..	1	..	9
Trichinosis .. ..	..	..	..	..	..	..	..	..	..
Tuberculosis .. ..	44(23)	10(7)	12(4)	2(2)	11(3)	4(2)	1	2	86
Typhoid Fever .. ..	..	..	1(1)	..	..	..	..	..	1
Typhus (Flea-, Mite- and Tick-borne) .. ..	..	..	..	..	..	..	..	..	..
Typhus (Louse-borne) .. ..	..	..	..	..	..	..	..	..	..
Yellow Fever .. ..	..	..	..	..	..	..	..	..	..

<sup>1</sup> Figures in parentheses are those for the metropolitan area.

mixture, extract or other substance containing not less than one-fifth per centum of levorphan;

Racemorphan, ( $\pm$ )-3-hydroxy-N-methylmorphinan, its salts and any preparation, admixture, extract or other substance containing not less than one-fifth per centum of racemorphan;

Levomethorphan, (-)-3-methoxy-N-methylmorphinan, its salts and any preparation, admixture, extract or other substance containing not less than one-fifth per centum of levomethorphan; and

Racemethorphan, ( $\pm$ )-3-methoxy-N-methylmorphinan, its salts and any preparation, admixture, extract or other substance containing not less than one-fifth per centum of racemethorphan

in the same manner as it applies to the drugs mentioned in paragraph (a) of subsection (2) of section 18 of the said Act.

The following Proclamations are hereby repealed:

- (a) Proclamation published in Government Gazette No. 94 of 24th April, 1952, relating to Dromoran (also known as Methorphan) (3-hydroxy-N-methyl Morphinan), and
- (b) Proclamation published in Government Gazette No. 109 of 5th June, 1953, relating to Methorphan (3-Methoxy-N-Methylmorphinan).

Signed and Sealed at Sydney this seventh day of November one thousand nine hundred and fifty-six.

By His Excellency's Command.

C. A. KELLY.

GOD SAVE THE QUEEN!

#### NATIONAL HEALTH ACT.

The following notice appeared in the *Commonwealth of Australia Gazette*, No. 63, of November 22, 1956:

#### NATIONAL HEALTH ACT 1953-1956.

##### Part IV.—Pensioner Medical Service.

##### Reprimand of Medical Practitioner.

I, Donald Alastair Cameron, the Minister of State for Health, hereby give notice, in pursuance of sub-section (1) of section 134A of the National Health Act 1953-1956 that I have this day reprimanded John Kargotich, of 10 Stafford-street, Midland Junction, medical practitioner, following investigation and report by the Medical Services Committee of Inquiry for the State of Western Australia established under section 110 of the National Health Act 1953 concerning the conduct of the aforesaid medical practitioner in relation to his provision of medical services for pensioners and their dependants under Part IV of the National Health Act 1953-1956 or under an arrangement made by the Director-General of Health under section 7 of the National Health Service Act 1948-1949 and the National Health (Medical Services to Pensioners) Regulations.

Dated this thirty-first day of October, 1956.

DONALD A. CAMERON,  
Minister of State for Health.

#### Notice.

##### CIBA FOUNDATION AWARDS.

CANDIDATES wishing to submit entries for the 1957 Ciba Foundation Awards for papers descriptive of research relevant to basic problems of aging are reminded that these must reach The Ciba Foundation not later than January 31, 1957. Information about the awards, for those not already aware of the conditions, may be obtained on application from G. E. W. Wolstenholme, Director, and Secretary to the Executive Council, The Ciba Foundation, 41 Portland Place, London, W.1.

## Nominations and Elections.

THE undermentioned have been elected as members of the New South Wales Branch of the British Medical Association: Currie, Roger Audley Dalglish, M.B., B.S., 1955 (Univ. Sydney); Cunningham, Patrick, M.B., B.S., 1953 (Univ. Sydney); Royle, Richard Arthur, M.B., B.S., 1947 (Univ. Sydney).

## Deaths.

THE following deaths have been announced:

BYE.—Reuben Robert Bye, on November 23, 1956, at Sydney.

HUGHES.—John Hughes, on November 25, 1956, at Sydney.

BOOTH.—Mary Booth, on November 28, 1956, at Sydney.

## Diary for the Month.

- DEC. 11.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
- DEC. 12.—Victorian Branch, B.M.A.: Branch Council.
- DEC. 12.—New South Wales Branch, B.M.A.: Clinical Meeting.
- DEC. 13.—New South Wales Branch, B.M.A.: Branch Meeting.
- DEC. 14.—Tasmanian Branch, B.M.A.: Branch Council.
- DEC. 18.—New South Wales Branch, B.M.A.: Ethics Committee.
- DEC. 18.—New South Wales Branch, B.M.A.: Medical Politics Committee.

## Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

Queensland Branch (Honorary Secretary, B.M.A. House, 225 Wickham Terrace, Brisbane, B17): Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

## Editorial Notices.

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All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2-3.)

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